

*November 1931*

# TECHNOLOGY REVIEW



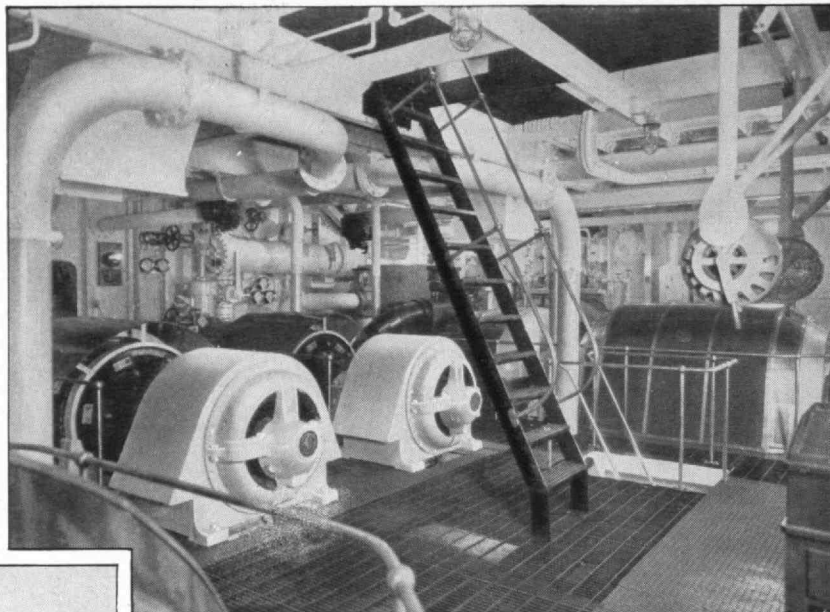
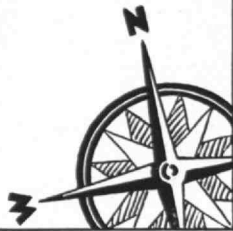


# technology review

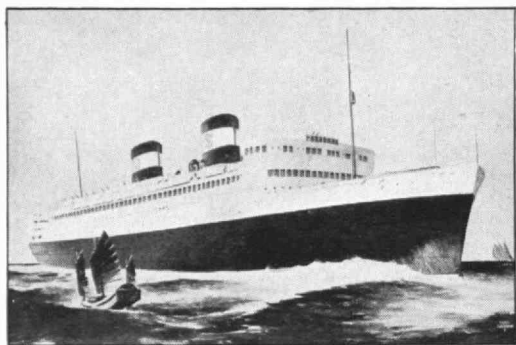
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THE TECHNOLOGY REVIEW, November, 1931. Vol. XXXIV, No. 2. Published monthly from October to May inclusive and in July at 10 Ferry Street, Concord, N. H. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription \$3.50; Canadian and Foreign subscription \$4.00. Entered as second-class matter at the Post Office at Concord, N. H., under the Act of March 3, 1879.



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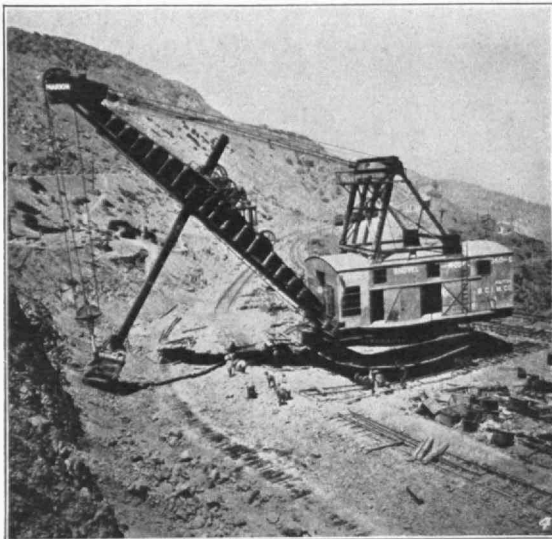
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## THE TABULAR VIEW

DANIEL C. SAYRE'S knowledge of the aeronautical vulgate derives not from academic, philological meditation, but from actual experience on the flying fields of the land. Professor Sayre wants it expressly understood that he is not a *modock*, a *dodo*, or a *keewee*, but a full-fledged, licensed pilot. Furthermore, he never affects elegant boots and only occasionally a *béret*, nor does he call himself a *pilote*. As an *intrepid birdman* in his own plane, he has gone *cross-countrying*, *daisy clipping*, and *hedge hopping* when not teaching in the Institute's Department of Aeronautics. He holds both a bachelor's degree ('23) and a master's degree from the Institute, and is, of course, numbered among The Review's Contributing Editors.

WILSON COMPTON, brother of Karl T. and Arthur H. Compton, is the third member of this well-known family to contribute to The Review. Unlike his brothers, Wilson Compton has not identified himself with the world of physical science, turning his efforts rather to economics. He was born in Wooster, Ohio, receiving his bachelor's degree from Wooster College. Later he went to the University of Cincinnati, where he obtained his A.M. and Ph.D. in 1912 and 1915. His formal education was completed at the Hamilton College of Law in Chicago in 1917, after taking a position for a year as Assistant Professor of Economics at Dartmouth College. Although his activities are many and varied, his dominating interest is his work as Secretary and General Manager of the National Lumber Manufacturers Association, with which organization he has been connected since 1918. The article on "Opportunities for Technically Trained Men in the Wood Industries" was originally presented as an address before the Combined Professional Societies recently at M. I. T. ¶The wood industry, suddenly faced with the perplexing problem of present-day competition, looks to science as the way out of its difficulties, for, through the application of scientific and engineering methods, a more intelligent use of the resources of logging and silviculture are made possible, enabling an old industry to retain a good part of its former supremacy despite change. The new motto "Grow forests with an axe" is indicative of the new spirit needed. Readers interested in supplementary information should consult The Review for December, 1930. In the Trend of Affairs section of that issue is a discussion of the lumber situation; in particular, the shifting timber supply. Still further information may be obtained from the National Lumber Manufacturers Association.

IN these days of biography it is surprising that Benjamin Thompson, Count Rumford, has escaped the widespread attention which his merits deserve, for this modern world is quick to hail heroes of science and eager to know the inside story of their achievements. The highlights of the amazing life of this man of sci-

(Continued on page 60)





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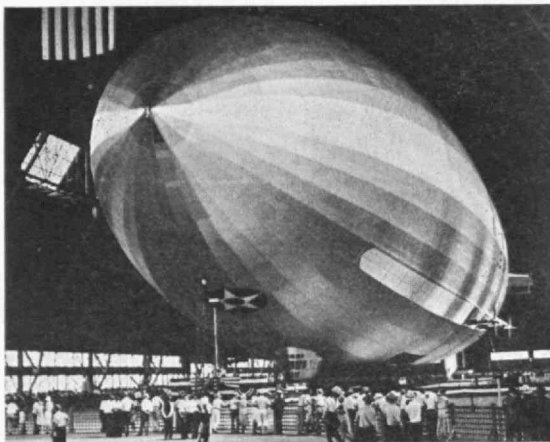
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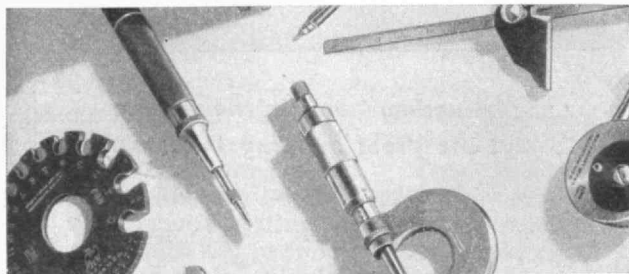
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## THE TABULAR VIEW

(Concluded from page 58)

ence, whose interests included all the world, is most entertainingly told by Mr. RICHARD W. HALE in his article on page 71. Those who would know more of Count Rumford than can be given in the space of a magazine article may be interested in reading "The Works of Rumford," published by the American Academy of Arts and Sciences. ¶Mr. Hale was for one year a member of the Class of 1891, transferring from Technology to Harvard, where he received his A.B. in 1892 and his LL.B. in 1895. Since then, he has practiced law in Boston, where he is senior partner of Hale and Dorr and Treasurer of the Old South Forum. Mr. Hale's article was originally issued by him as a private imprint at Christmas time, 1927. It also appeared in the New England *Quarterly* for October, 1928. We are grateful to its editors and to Mr. Hale for permission to republish in The Review. ¶It is pertinent to note that the Academy of Arts and Sciences, established by Rumford through a gift of \$5,000 to the Academy in 1796, recently presented to President Compton the Rumford medal, awarded to authors of the most important discoveries or useful improvements in light and heat in any part of North America or in any of the American islands.

PROFESSOR NORBERT WIENER is on leave from the Institute, where he has been connected with the Mathematics Department since 1919, and is now in England to confer with the outstanding mathematicians of that country. He was born in Missouri and educated in the East, receiving his A.B. from Tufts, his A.M. and Ph.D. from Harvard, and he has studied abroad. Mathematics and logic are his specialties, but Professor Wiener is more than a specialist confined to one interest, being one of those rare individuals with talents in many directions. To him mathematics is art, as he explains in an article written for the January Review in 1929. ¶Professor TENNEY L. DAVIS, also on leave, is traveling and studying abroad in the interests of chemistry and its history. He is of the Class of 1913 at M. I. T. and holds a master's and doctor's degree from Harvard University. He has been associated with the Chemistry Department at the Institute since 1919. ¶FRANK A. THAS, '28, is Mechanical Superintendent of the Hamilton Watch Co.

IN the October issue, page 48, The Review listed architects, engineers, and contractors of the new physics and chemistry building and the spectroscopic laboratory. This list, unfortunately, was ambiguous with respect to the functions of these various parties. We take pleasure in presenting the following corrected statement. The architects and engineers for the spectroscopic laboratory are: Chas. T. Main, Inc., also engineers for the chemistry and physics building. The general contractor for the buildings is Stone and Webster, Inc., and the actual construction work has been in the hands of the Scully Company. Coolidge and Carlson are the architects for the physics and chemistry building.

# The King's Penance



By Mrs. P. D. Tryon, Minneapolis Junior League. One of a series of TIME advertisements prepared by Junior Leaguers.

In December, 1170, Archbishop of Canterbury, Thomas à Becket was foully murdered before the altar in Canterbury Cathedral by henchmen of King Henry II. In vain Henry fasted, wept, denied responsibility. God-fearing bishops, clerics and laymen, knowing that the death of Saint Thomas occurred after hasty words uttered by the King; knowing also, that it followed years of bitter controversy between Henry and Becket on questions of Church versus State privilege, doubted his sincerity, thirsted for his excommunication.

Back in Normandy, after the conquest of Ireland (undertaken at this time partly to escape visits from papal legates), amid his disension-ridden French provinces, Henry found himself still in bad odor with the church, ardently desired reconciliation. At Avranches he buried his pride, met legates of Pope Alexander III, before whom he swore to innocence of the murder, and as penance for his angry words promised many concessions. To complete his submission he secretly vowed a final humiliation.

As TIME, had it been published July 16, 1174, would have reported subsequent events:

Idle onlookers at the gateway of the town of Canterbury last week watched weary travellers plodding barefooted toward the great Cathedral. Object:

to visit the shrine of the late Archbishop, Thomas à Becket, sainted martyr of the Roman Catholic Church.

Bloodstained footprints in the dust behind him drew the attention of the bystanders to one pilgrim in particular. Ruddy, square-jawed, freckle faced, noble in mien, though in the garb of a penitent, he made his way thru the dusty street of Canterbury followed by a crowd of the curious, who soon knew him to be his most gracious Majesty, Henry II, King of England, Duke of Normandy, Count of Anjou, Maine and Touraine, Count of Poitou, Duke of Aquitaine, suzerain lord of Brittany.

Up the steps of Canterbury Cathedral, into the vaulted silence they followed. King Henry straightway descended into the crypt, threw himself at the foot of the sepulchre of Saint Thomas, where he lay prostrate with outstretched arms, bitterly groaning, weeping, the while Gilbert Foliot, Bishop of London ascended the pulpit and addressed the multitude.

Eloquent, he adjured them to believe the King's assertions of his innocence of the murder of Becket and to accept this humiliating penance as proof of his regret for the passionate expression which had led to the crime, albeit unintentionally. The expression: "Will none of the cowards who eat my bread, rid me of this turbulent priest," uttered shortly before the murder to a group of courtiers.

Not yet content, burly King Henry repaired to the Chapter House, where were assembled eighty monks and bishops. Here he stripped, bent his bare shoulders, received from each monk three, from each bishop five stinging lashes with a monastic rod.

Bruised and bleeding he returned to the shrine, fasted, and watched the night thru, at dawn took horse to London where he arrived next day. His Majesty is still confined to his bed. . . .

Cultivated Americans, impatient with cheap sensationalism and windy bias, turn increasingly to publications edited in the historical spirit. These publications, fair-dealing, vigorously impartial, devote themselves to the public weal in the sense that they report what they see, serve no masters, fear no groups.

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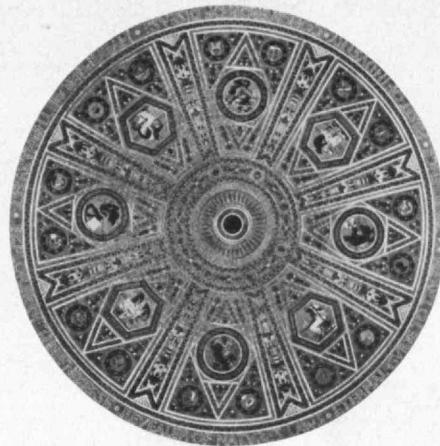
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*From the Ceiling of the auditorium of the National Academy of Sciences in Washington, D. C*

# THE TECHNOLOGY REVIEW

A NATIONAL JOURNAL DEVOTED TO SCIENCE, ENGINEERING, AND THE PRACTICAL ARTS

*Edited at the Massachusetts Institute of Technology*

VOLUME XXXIV

NUMBER 2

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*Publisher*  
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**PUBLISHED** monthly on the twenty-seventh of the month preceding the date of issue at 50 cents a copy. Annual subscription \$3.50; Canadian and foreign subscription \$4.00. Published for the Alumni Association of the Massachusetts Institute of Technology, Bradley Dewey, President; George K. Burgess, Donald G. Robbins, W. Malcolm Corse, Vice-Presidents; Charles E. Locke, Secretary.

Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 11–203, Massachusetts Institute of Technology, Cambridge A, Mass. Entered as Second-Class Mail Matter at the Post Office at Concord, N. H. Copyright, 1931, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect changes of address. Both old and new addresses should be given.





*From a photograph by Harris and Ewing, taken at the time of  
Dr. Stratton's accession to the Presidency of M. I. T. (1923)*

**SAMUEL WESLEY STRATTON**

**July 18, 1861 — October 18, 1931**

*For an extended account of Dr. Stratton's life and his great contributions to  
science, industry, and to the Massachusetts Institute of Technology, see page 84*

# THE TECHNOLOGY REVIEW

Vol. 34, No. 2



November, 1931

## WINGÉD WORDS

### *Aviation Enriches the American Language*

BY DANIEL C. SAYRE

THE effect of specialized vocabularies on our general speech is one of the interesting linguistic phenomena of our day. The flood of terms which flows in from the fields of sport and of gangdom has frequently been the subject of comment. No less important in this technological age are the carrying over of expressions from the vocabularies of science and applied science. Of all such technical fields, those affecting that popular human occupation, transportation, have ever been the most fruitful. Imagine yourself without *safety valve*, *make the grade*, *step on it*, *put on the brakes*, *a mile-a-minute*, and a score of others with the transportation imprint. The present article deals with the next assignment in our language lesson, the jargon of aeronautics.

The purely technical, aeronautical nomenclature which gets into glossaries, such as that issued by the National Advisory Committee for Aeronautics, is no more interesting to the outsider than the technical language of any other industry, save that it seems inevitable that the next generation must know as much about *ailerons*, *pitching moments*, and *dihedral angles*, as the present one does about carburetors, differentials, and wheel bases, and as our fathers knew about surcingle and whiffletrees.

In the early years of the century when the vocabulary was in the first process of formation, there were three rather diverse sources from which new aeronautical terms were derived. The first was a small group of scholarly scientists, led by Langley and Bell in this country and Lanchester in England, who fought a rather unsuccessful battle for a complete nomenclature

of classic or pseudo-classic words. The first two clung tenaciously to *aerodrome* as a name for the new heavier-than-air craft, a term which survives through some queer twist only as the learned word for an airport. More legitimate traces of this druggists' latin school are, of course, found in *aeronautics*, *aeronaut*, *ornithopter*, *helicopter*, *aerodynamics*, *aerostatics*, and some others. In England their success was somewhat greater and the root *aero-* is retained in *aeroplane*, *aerofoil*, and so on, where it has long since yielded to *air-* in America.

The second source was France, especially for names of the different parts of the airplane, such as, *aileron*, *fuselage*, *empennage*, *decalage*, and many of the original lighter-than-air terms; such as, *balloon*, *dirigible*, *ballonnet*, and so on. The third is ordinary Anglo-Saxon words, newly used or newly compounded. The bulk of these, such as *landing gear* and *control stick*, are as uninteresting as the words *screw driver* and *toothache*, but a few show some imagination. *Ceiling* is used as the maximum altitude to which its power will permit an aircraft to ascend, or the upper limit of visibility from a navigation standpoint. *Barrel roll* and *falling leaf* are nicely descriptive of the maneuvers they denote, and the word *zoom* positively approaches onomatopœia.

However it is to the aeronautical vulgate, to the speech of the real air-going members of the populace that we must turn if we are in search of colorful language. Take for example a few verbs. After *revving up* his motor, the pilot *gives it the gun* and *takes off*. If his engine *poops* or *konks*, he will be *forced down* and is in



for a *dead-stick landing* and must *get into* the nearest field as best he may. Such are the chances of *cross-countrying*, and they are particularly bad when *ferrying the mail* through a *fog factory*, or when *pushing a crate* anywhere, even over a *Kansas*.

The meanings of most of these terms are apparent; some need explanation. After running his motor to warm it, finally testing it at its maximum rate of revolutions (*revving up*), the pilot opens the throttle governing the gasoline flow, or *gives it the gun*. If his engine loses power or stops completely, the pilot must land unwillingly with his propeller no longer turning, that is, *dead*. *Poop* is an ancient word; *konk*, I think, came from that class of comic-strip words like *zowie* and *pow*. Flying across country is never *crossing country*; a *fog factory* is a spot where fogs are common, such as Nantucket in the summer, western Pennsylvania, and San Francisco; *pushing a crate* is flying a decrepit airplane; and *Kansas* is synonymous with good flying country, *i.e.*, continuous, open, flat fields.

There are plenty of others. *Daisy clipping* and *hedge hopping* are, of course, extremely low flying *across country*. To fly low over a landing field is to *drag* it or to *scoop* it; to dive at something on the ground in order to show off is to *jazz* it. *Barnstorming* is to go from town to town taking up the natives for short rides at so much a head, and is carried on usually by the fast-dwindling race of itinerant or *gypsy* pilots. Landing is also *getting down* or *setting it on the deck*. To have an accident and damage the plane is to *crack up*; to ruin the plane is to *wash it out*. The word *taxi*, to move across the ground, is quite an old one, aeronautically speaking, and seems to have been applied to airplanes about as soon as it appeared in the automobile world. Incidentally, to turn on the ground, especially inadvertently, is to *ground loop*.

For the plane itself the pilot uses *crate*, *bus*, *ship*, and *job*. The propeller is the *prop*, the throttle is the *gun* (to open the throttle is to *gun* the engine), and the control lever is universally the *joy stick*, the

there are many nicknames. The Ford trimotors are *tin geese*, an amphibian is often a *duck*, and the unique examples labeled *Whistling Bill*, *Stuttering Sam*, *Andy Gump*, the *Galloping Goose*, the *Iron Horse*, and the *Bath Tub* earned their sobriquets by some peculiarity of construction, performance, or appearance. I can assure you that they are descriptive to the point of genius.

Bellanca, the designer, perpetrated a ship which was said to have on *plus fours*, or *tin drawers*, due to a feature of its landing gear which has since taken the generic term of *pants* on all subsequent designs. The word ceiling possibly suggested the pilot's term for aloft, which is *upstairs*. For instance: How's the weather *upstairs*? Parachute activities have produced the expression to *bail out*, meaning to climb out of the cockpit and go over the side. A successful parachute jump for the purpose of saving one's life in a legitimate emergency automatically enrolls one in the "Caterpillar Club." A training or exhibition jump does not.

The pilot has few names for his kind, but many for his inferiors. For example, if a person attaches himself to aviation solely for social or publicity reasons, and there are many such, he is called a *modock*, a purely synthetic term filling a great want in the flyer's vocabulary, and originally advanced by one Cy Caldwell, aeronautical

humorist, who claimed it meant less than nothing in delicatessen Greek. A *kewee* is a ground-school pupil who has not yet flown, or a ground officer, attached to a flying field, who does not fly. The *kewee* is supposed to be an Australian bird with wings so minute it cannot fly. Instead, it runs around making a hideous noise. The ground-school student is also called a *dodo*. [The word *birdman* is usually a term of derision, except possibly when used with the adjective quiet. The *Quiet Birdmen* is a non-*modock*, non-*kewee* organization of pilots, and a *QB* pin is good for more drinks in more towns than a prohibition agent's badge. A *pilote* is to a pilot what a *shoppe* is to a shop, and describes the flyer who affects elegant boots and breeches and possibly a *béret*.

origin of which seems lost in the Freudian remoteness of the Will to Fly. For particular models and types

The adjective intrepid is especially disliked. In 1783, two Frenchmen made the first flight in a balloon, and one of them in writing it up referred repeatedly to his fellow aeronaut as "*mon compagnon intrépide*" and it has, alas, been over-

done in the public press ever since.

Rather amusing are the aeronautical words the pilots apply to themselves. To be in a *flat spin* about something means to be in the mental state of going around and around completely out of control. To be *down wind* is generally to be in a poor position, usually helpless, and smacks of the general expression *up the creek without a paddle*. As an adjective, *down wind* has the force of the general terms *no good*, *goofy*, *all wet*, *irregular*. Likewise, the expression *to test hop* is used interchangeably with the verb *to try out* and is applied to anything from a brand of cigarettes to a new girl friend. A *hangar* was originally any headquarters, but is now usually a speakeasy, or at least some place where drinks are being put out. *To be forced down at a hangar* therefore takes on the aspect of a bibulous afternoon or evening. Then, of course, you hear talk like: I was cruising along 43d Street when along came Bill, Sam, and Charlie in formation, and we all sideslipped into a speakeasy and did a lot of barroom flying, which is synonymous with *horizontal*, *bunk-room*, or *grocery-store flying*, and means general lying about personal aerial exploits.

Then we have the *going* and *pulling* expressions. *To pull a Lindbergh* means to do something heroic, but *to go Lindbergh* means to get the flying fever in a rather callow manner. Likewise, *to pull a Levine* is to lay an overemphasis on money matters. *To pull a Nungesser-Coli* is to disappear completely, as *to pull a Dole Derby* is to engage in a complete debacle of some sort. Likewise, *to pull a Mitchell* is to argue yourself out of a job, or to be generally uncomfortable to your superiors.

The journalistic dialect, when administered in special aviation departments by special editors, is in general good glossary *aeronautica*, supported perhaps by some of the more respectable vulgate. It is the headline writers, the general assignment and rewrite men who lay rather

violent hands on an aviation story, largely through "phoney" uses of legitimate expressions. For example, "Lindbergh Hops for Europe." Now, a pilot never *hops* for anywhere, for a *hop* is a short ride in the locality of some one airport, usually limited to about 15 minutes duration as a maximum, and the expression implies a return to the same airport. Then, "Lindbergh Zooms Way Across Continent" is little short of criminal. To *zoom* is officially defined as *to climb for a short time at an angle greater than that which can be maintained in steady flight*. It would be just as correct, therefore, to say "Lindbergh Loops Way Across Continent," or "Lindbergh Barrel Rolls Across." Why not? And then there is "Lindbergh Wings His Way Somewhere." A pilot would no more admit to winging his way somewhere than a sailor would admit he had been out ploughing the rolling deep. There are also some old-timers which creep into accident records, like *airpockets* and *deadly nose dives*, but the flying populace have long since preferred to rely on their own grapevine reporting system on aeronautical shambles. The language of the vine is correct anyhow.

The pulp-wood authors are in that peculiar position in relation to aeronautics which is occupied by newspaper sports' writers in relation to their own subject. The baseball writer, for example, may not say: "With one batsman out in the third inning of the second game, the Boston Americans scored a run through a combination of two hits to right field and an error by the Philadelphia third baseman." He must say something like this: "After two lusty smackings of the apple to the right field sun gardens in the third frame with one down and a sad miscue by the Mackmen's hot corner merchant, the Pale Hose again had crossed the platter with what might have put the works on ice in the nightcap." No more may a writer of an air thriller say: "The plane taxied across the field and took off." It must go: "With a terrific roar from the 12 powerful cylinders under its sleek cowl, Noddy Nixon's great Blukker waddled across the tarmac and bit the air. 'Revs 1,650 Course N. by N.E.,' said Dan Baxter by his side, who up to this point had taken no part in the conversation." And so on, and so on. Obviously, another American case of overdeveloped demand resulting in a spurious supply.

How much of all this language, no matter of what category, will eventually get into the general vocabulary is, of course, impossible to say. Already many full expressions have gone over. *Give it the gun* is already the modern version of *step on it*, which displaced *open the throttle*, which displaced *whip* (Concluded on page 102)



# Opportunities for Technically Trained Men in

The Annual Production of Lumber in the United States Is Now Thirty Billion Feet; a Quarter Century Ago It Was 40% Greater. Why?

WOOD, by reason of its diversified natural qualities, is capable of being made the most universally useful of all the materials of industry. It is truthfully stated, on the other hand, that wood, during the processes of conversion of the standing forest into the finished wood article, is with few, if any, exceptions subject to greater losses than any other important raw material. In these two facts lie great present and potential opportunities for the application of science and research in the wood industries.

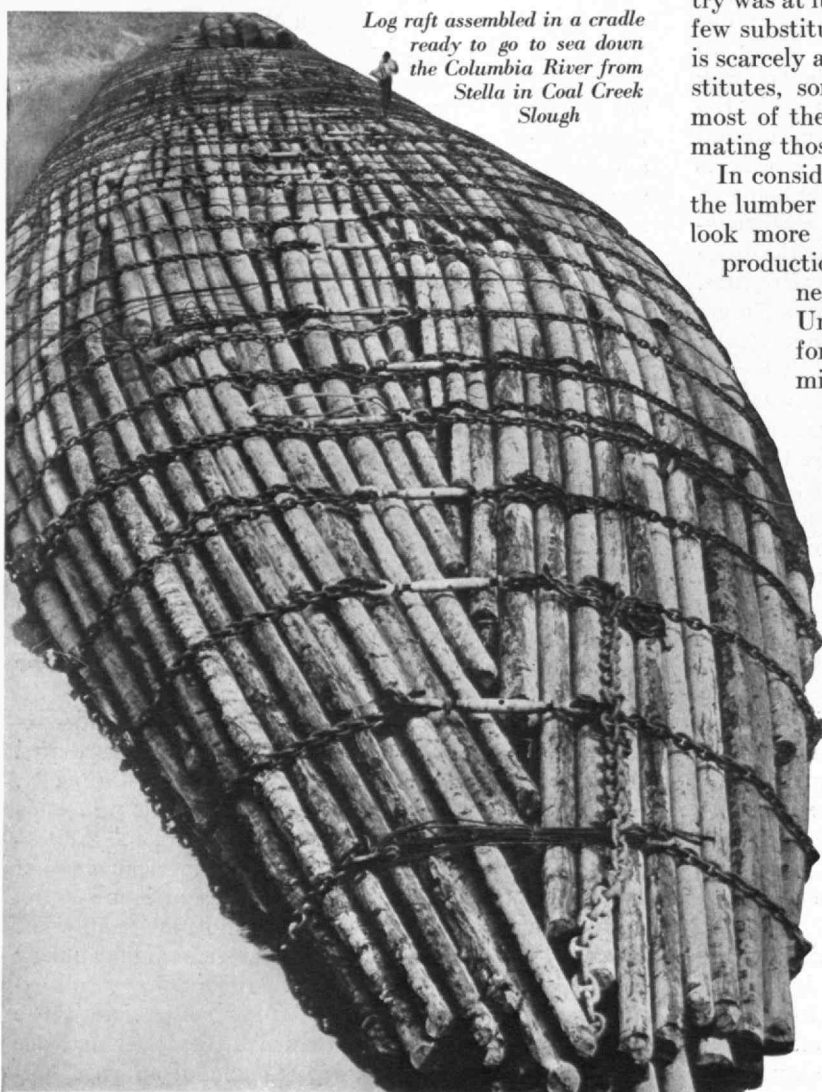
I ask you first to think of the lumber industry and of its present industrial and scientific problems in the light of the changing economic conditions of the last 30 years. A consideration of these problems reveals the following facts. It is the oldest American industry, established three centuries ago and sharing with the hardy pioneer the trail-blazing which gradually opened up the vast resources of the United States. It is the

supplier of housing for 80% of the American people, and for three centuries the source of the favorite and almost universally used material of industry. It has been encouraged by habit to depend upon custom and established preference to keep its products in use; to rely, too much perhaps, on traditions in an age when people are breaking with tradition; and to depend on adherence to old styles when the public is eager for new styles. For decades it has remained almost contemptuous of science, considering it the work of theorists, whose ideas have little bearing upon the art of judicious timber purchase or of lumber manufacture.

With this background, the lumber industry entered, a quarter century ago, upon what has proved to be a period of the most extensive and most vigorous competition for public patronage ever recorded, the seriousness and intensity of which become increasingly apparent. At the outset of this period, the use of lumber in this country was at its peak. For most of its important uses it had few substitutes, and in many it had none. Today there is scarcely an important use for which there are not substitutes, some of them for certain purposes superior, most of them readily available, and at prices approximating those of suitable lumber.

In considering the opportunities for technical men in the lumber and woodworking industries, it is helpful to look more closely into the present status of lumber production, distribution, and consumption. There are nearly two billion acres of land in continental United States. Originally, nearly half was in forest, but today only one-fourth (about 500 million acres) is forest land, supporting virgin timber and new growth, while on 100 million acres there is almost no timber at all. Of these lands, over 100 million acres are in public ownership, 150 million acres are owned by farmers, and the remaining half is largely in the ownership of timber and lumber companies.

The annual production of lumber in the United States is now about 30 billion feet; a quarter century ago it was 40% greater. There are now about 20,000 saw-mills; 20 years ago there were over 40,000. About 1,000 mills, or 5% in number, produce over 60% of the total production of lumber. The Western States now produce nearly 50% of the lumber supply of the United States, and the proportion is increasing, but a half century ago, they produced less than 5%. Three-quarters of a century ago the Northeastern States produced 60% of the lumber supply; they now produce less than 4%. The Southern States now supply over 40%; a half century ago,



Log raft assembled in a cradle ready to go to sea down the Columbia River from Stella in Coal Creek Slough

# the Wood Industries

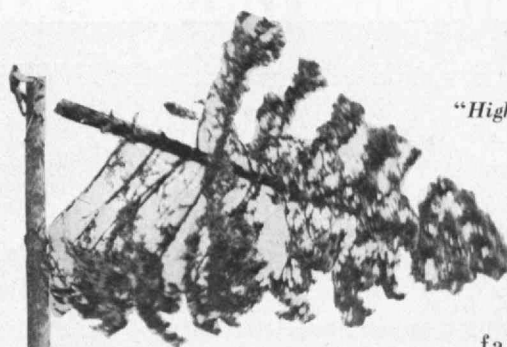
BY WILSON COMPTON

only 10%. Such have been the distinctive geographical shifts in the sources of lumber supply.

Of the 20 leading American industries, not including agriculture or the railroads, lumber and its manufacturing industries rank second in the number of persons employed, third in the extent of its investment, and eighth in the value of its products. But in these industries the annual value of products is only 25% of the aggregate value of their investments in timber and plants. In the automobile industry, at the other extreme, the annual value of products is 50% greater than the aggregate capital invested in automobile manufacture. Of the ten largest American industries, only one shows as low a ratio of value of annual product to aggregate investment as does the lumber industry. Herein lies one of the lumber industry's most difficult economic problems; *i.e.*, a relatively high percentage of fixed assets, and, in relation to annual income, a high ratio of investment in tangible property subject to increasingly heavy annual taxes, and a need of relief from multiplying capital carry costs, through quick liquidation. This is at the foundation of the present familiar, costly, and wasteful trend toward overproduction in the lumber industry, reflected throughout the various fabricating, wood-using industries.

I have already referred to the losses in present-day wood conversion processes. Of the average tree cut for lumber manufacture, one-fourth, including defective trees, tops, limbs, and stumps, is left in the wood unutilized because there is no present use for it. Of the log brought to the sawmills, one-fourth, consisting largely of bark and the saw kerf, is not utilized except for fuel. Another fourth, consisting of slabs, edgings, and trimmings, is usually converted, so far as possible, into by-products, such as lath and miscellaneous small dimensions. The other 50% of the log emerges in the form of rough lumber.

Nor does the loss of material end there. When the finished lumber itself is used, the further fabricating losses in building usually range between 5% and 15%; in box manufacture, between 10% and 15%; in car construction, about 10%; in furniture making, nearly 25%; in the wood-using industries, generally an average of 30%. Of the total wood content of the average tree, therefore, as it stands in the woods, only 35% in its finished form is finally used in ordinary building, and less than 30% in the more exact-



"Highclimber" topping  
a fir spar

ing manufacture of finely  
fabricated wood

products. These facts give a fair, quantitative measure of the stupendous physical opportunities for more complete utilization of raw material in the wood industries.

**I**N LOGGING and milling lie great opportunities for the forester, logging engineer, efficiency engineer, mechanical engineer, and transportation expert. For the forester, there are the problems of cutting and managing the timber stands so as to regenerate the species and the qualities of individual trees which will yield the highest financial return. These men must be versed in silviculture and silvics, in methods of natural and artificial reforestation, in the properties of the different kinds of woods, and in the requirements of the industries dependent upon wood as a raw material.

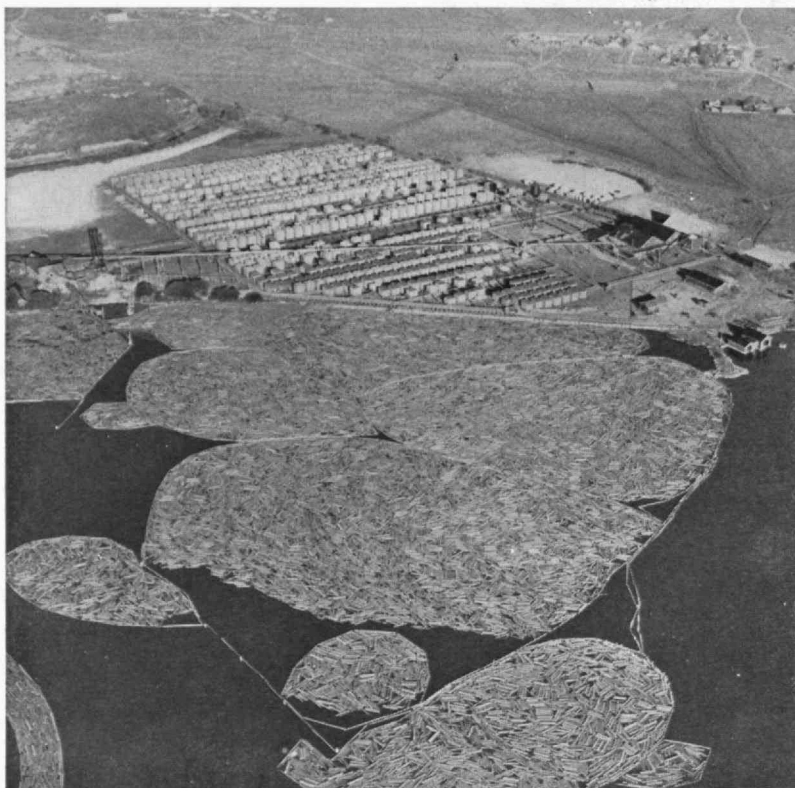
For the logging engineer, there is the problem of determining the logging equipment, its installation and the manner and means of its use which will permit conservative logging at the lowest cost. The logging and efficiency engineer should carry on studies to determine, for example, which type of equipment for felling the trees, for skidding logs, and for transporting them to the mill, should be used under the varying conditions of density of timber stand, species, topography, accessibility to mill, and availability to natural means of transportation. They should determine the relative profit in cutting and logging trees of different species, different diameters, at different relative distances from the point of converting the log into sawmill products. Too

often the wood losses in logging are due to inefficient equipment or rule-of-thumb logging methods.

A portion of the loss of material in the sawmilling processes, aggregating nearly 25% of the volume of the log, is due to inefficient or inadequate machinery and equipment and to antiquated methods of mill operation. Here again the engineer has an important place in the lumbering operation, in studies of the milling operation itself, of sawmill machinery design and installation. Manufacturers of sawmill



A. M. Prentiss



Brubaker Aerial Surveys

A lumber mill at Klamath Falls, Ore.

machinery are giving constantly increasing consideration to the need of refinement in their products and of technical skill in their use in the lumber and wood-using industries.

There are, nevertheless, regularly produced and sold to lumber manufacturers by the sawmill machinery manufacturers circular saws which consume saw kerf as thick as 6/16ths of an inch, whereas properly installed steel band saws of slightly over 2/16ths of an inch will do the sawing even more accurately. There is still in wide use equipment which unnecessarily damages both logs and lumber in handling at the mill, edgers and trimmers so set or so operated as to cause unnecessary waste in wide edgings or long trimmings. More than ten thousand portable, circular sawmills are ordinarily in operation in the United States. They produce a third of the lumber. In the milling operation, generally and with only a few exceptions, they waste more of the content of the log than they save in the form of lumber.

The distribution of lumber from the sawmill to the wood-working plant and other points has wide ramifications. The largest markets for lumber are located from 1,000 to 3,000 miles from the most plentiful timber supplies. Improvements in transportation and distribution methods will, of course, place wood at the primary fabricating plant at lower cost. The primary lumber and timber product of the United States has an annual value of somewhat less than a billion dollars, and it costs nearly half a billion more to get it from producer to consumer. Probably the greatest single advance recently made in reducing the cost of lumber to the wood-fabricator is in the field of dimension cuttings. In this process the defects are cut out at the source of

production, expensive transportation costs on waste are avoided, and cut-to-desired-dimension stock is made available to the wood fabricator.

**T**HERE are in the United States some 600 different species of trees, though not all of these 600 kinds attain sufficient size for lumbering. Many of similar wood characteristics are grouped commercially and, for ordinary purposes, are indistinguishable. The user of wood, therefore, finds available to him some 100 different kinds, of which about 30 are important.

Each species of wood has some 40 separate and distinguishable properties. Twelve of these are mechanical properties, such as hardness or softness, strength, toughness, and stiffness; 18 are physical properties, such as shrinkage, resistance to decay, weather or insect attack, heat and sound insulating properties; and ten are chemical properties, such as volatility of woods, permeability, combustibility, and the characteristics of its extractives and its distillation products. These mechanical, physical, and chemical characteristics may occur in so many varying combinations in the various species as to provide wood suitable for the 4,000 diversified commercial uses which

I have mentioned. There is no other material which has the wide range of properties to be readily secured in a proper selection of the different species of wood for their proper purposes.

Of the 30 billion board feet of lumber produced annually, about one-half goes directly into light and heavy construction, the type of use in which the structural engineer, the architect, and the builder are primarily interested. The other half is further fabricated, treated, and refined. Important among these are planing mill products and general mill work, boxes, furniture, musical instruments, tanks and silos, railway cars, caskets, ships and boats, and some 35 other well-recognized, broad classes of wood articles. I need only point out that the conversion of lumber and wood stock into these highly refined articles presents an enormous problem for the wood fabricator.

There is another large class of uses for wood in which the wood itself does not pass first through the form of lumber. Much of this material would otherwise not be put to good use. I refer to utilization through chemical means to produce wood pulp products, plastics, and other chemical derivatives of wood, cellulose and lignin—those mysterious substances of wood which present a field of exploration, of which only the fringes have been so far touched by scientific research.

I believe we are entering upon an age of cellulose which promises an industrial "Battle of the Giants" in the next quarter of a century. The winner may be determined largely by the success of scientific research in mastering the mysteries of cellulose and lignin. Cellulose in the form of wood may be produced readily throughout the United States (*Continued on page 90*)



# BENJAMIN THOMPSON: COUNT RUMFORD

## *His Romantic Career in Statesmanship and Science*

BY RICHARD W. HALE

**B**ENJAMIN THOMPSON, born in the small Massachusetts town of Woburn, just north of Boston, rose to be Prime Minister of Bavaria; following on that he continued a romantic career in statesmanship and science. He was Count Rumford of the Holy Roman Empire, a member of the Order of Saint Stanislaus of Poland, and of the Order of the White Eagle. He ruled Bavaria as prime minister. Then he was accredited as Bavarian minister to Great Britain. In later life he was a famous scientist, a leader in thought and action, known, admired, and followed throughout the civilized world. When he was prime minister of Bavaria it became his duty to accomplish certain results, and to bring those about he found it necessary to invent the common kitchen range upon which we all cook today. No chimney need smoke if his observations upon that subject be heeded. But if one were asked, in our modern competitions designed to measure ignorance, to identify Rumford, the answer would probably be that it was a manufacturing city in Maine or a baking-powder from Rhode Island.

While his influence upon history and upon human comfort was great and lasting, yet he did not appeal to the popular imagination and has passed out of common knowledge. I write about him to dispel the resulting ignorance. The material is ample, but has been abused and neglected.

His father and mother were honest though poor. Experts in New England genealogy have provided the usual pedigree, but it proves nothing other than the expected. Massachusetts, in 1753, when the boy was born, was full of Yankees about whom all the usual things could be said. Their emigrant ancestors had all come over the sea in the great movement which began in 1630. The later generations had been fighting the New England soil for a living during every season of the following hundred years. Benjamin Thompson might have been born into any family of this type or in any Massachusetts town. He first appears in history when he is three years old, fatherless, his mother married again. He is B. Thompson of Woburn. Of course he went to common school, and when he was 13 he knew the Three R's. But there are some visible distinctions between Thompson and the common New England boy of his age and time. From the very beginning writing and self-expression appear to have been easy things with him. At this age of

13 he became an apprentice in a little store on Essex Street in Salem. We call it little because we know that the employer, John Appleton, kept store in his own house. But it probably was not humdrum or monotonous. Appleton dealt in manufactured goods imported from England, and he probably also kept whatever a general store used to keep. The distinctions of those times were clear. There were only two kinds of goods for sale, English or manufactured goods and West India goods — West India goods including sugar and molasses and something which it is not easy to get in Salem nowadays except by stealth. These, then, were

naturally wet goods, and it became easy to speak of English or manufactured articles as dry goods. Appleton's was primarily a dry goods store. After a year or two of the boy's experience in this apprenticeship his guardian writes to his employer, saying:

"Thompson has wrote to me diuers times about his affairs. He saith he hath Sum priuylege of trade for himself, and that you, Sir, would let him have sum fish to ship."

There is a whole biography in those phrases. And the circumstances of all merchandising at that time supply romance. We are talking about the West Indies and the slave plantations. For when an apprentice wants upon his own account to have "sum fish to ship," the mercantile scheme is to send salt cod from the New England fisheries to the West India plantations. It was the standard slave ration.

Our young Benjamin himself places at about this time the changes which make him distinct from the ordinary run of New England boys. In his reminiscences he describes his start:

"A very responsible minister of his own prompting undertook to instruct me. He taught me even higher mathematics. Before the age of 14, I was able to calculate and trace rightly the elements of a solar eclipse. My computation was correct within four seconds . . . my thirst for knowledge became inextinguishable."

That was a prime minister looking back upon his modest beginnings. What a story it is! And at this age also he invented machinery for perpetual motion, although not even his genius could make a go of it.

We are fortunate in a description of this machine from a distinguished source. He had a constant friend in America. Probably no one today could identify this friend if I simply called him Loammi Baldwin, but those wise in history know his distinguished career, and his



*The Gainsborough portrait of Count Rumford recently bequeathed to Harvard University by the late D. C. Converse*





taught until Colonel Timothy Walker of Concord, N. H., sent down for him. He taught some things out of school, and he carried his charm with him. Colonel Timothy Walker was also the Reverend Timothy Walker, and he had a daughter, and the daughter was 33 and a widow and had her late husband's fortune. Thompson was 19. She did not remain single 365 days between the rich first husband, who was 18 years older than she, and the handsome second husband who was 14 years younger. The first was Colonel Paul Rolfe. He had been the first private owner in New Hampshire of that particularly fine sort of carriage which was called a "carriole." And we are bound to observe and admire the celerity with which Benjamin Thompson promptly annexed both the lady and the carriage. In later life, reminiscing about the incident with the reflections of 25 or more years of experience, he acknowledged to a French philosopher that she married him. His word is supported from an independent source. In a town like Concord and a state like New Hampshire there is extraordinarily persistent gossip passed down by word of mouth until it becomes history, and that gossip agrees, saying specifically that the lady popped the question.

OTHER notes and memoranda of the new and young husband indicate that about this time he replaced the blue Huzza cloak. At any rate he possessed a "very good Hussar cloak faced with scarlet shalloon, with yellow, mock-spangle, metal buttons," and at about this time he also possessed a "plaid red gown, lined with Crimson shalloon." He went to Boston on his honeymoon, doubtless in the carriole, and the same long-persistent gossip of Concord has preserved a vivid picture of his call upon his mother in Woburn upon the return trip. He drove the carriole up to her door and claimed her blessing. Now remembering that the bride was substantially the same age as the groom's mother, we should realize that to the unprepared eye of the lady there came out of the clear sky the sight of her Benjamin dressed in scarlet shalloon, accompanied by a bride upon whom that scarlet may well have cast some reflection. The story ends happily, but in the beginning the mother could not believe in anything except the scarlet before her.

On the bridal tour the pair went to Portsmouth, N. H. Portsmouth was the capital of the Province, the center of aristocracy, ship-owning, and commerce. Even at that date it had had a most interesting history. Far excelling any other social center in the Colonies, it was the home of men who lived their lives of leisure upon their returns from land. The original New Hampshire charter was a grant to Mason like the grant of Pennsylvania to Penn, and a descendant had sold all the land of the Province to a quite modern syndicate called the "Masonian proprietors," monopolists

who took tribute from every township that was settled, as New Hampshire grew and extended toward the north. The first citizens of Portsmouth were the real thing in upper crust, and Governor Wentworth was the top of the loaf. On November 13, 1772, Wentworth had a grand military muster at Portsmouth, and there he first set eyes upon our young benedict. Benjamin Thompson was on November 14 a guest at dinner at the famous Wentworth mansion.

The long series of promotions and titles begins, and the boy, B. Thompson of Woburn, who wanted "sum fish to ship," disappears into Major Thompson of the Second Provincial Regiment of the Province of New Hampshire. The incident throws a vivid light upon the gentleman's career. He had the power to charm, he ingratiated himself with others easily and excelled in social deftness. But we must admit that he always looked upwards, and never downwards. A wise old saw of his New England countryside offers the advice that one should "keep the hair of every dog growing toward its tail." But even in his own interest and to advance his own career Thompson never had the capacity to smooth the hair of the under-dog. Every officer who lost his promotion by having a major suddenly inserted into the regiment after a Governor's dinner party, every private who hated a scarlet-shalloon dandy, and indeed every being of the human kind who stood a rung or more of the ladder below our hero must have watched his rise with a justified antipathy. Not even a dog's bone of conciliation was thrown downward from Thompson while he was pushing forward upon his ingratiating and upward way.

Loammi Baldwin describes Major Thompson:

"... he never appeared at public entertainments or in fashionable circles without being respectfully noticed. His genteel appearance and manly, impressive address, attracted the observation of many. Among others he was particularly noticed by the governor, Wentworth, who invited him to his party and never spoke of Mr. Thompson but with delight."



From a caricature by James Gillray (1802)

Gillray's famous caricature of the Royal Institution. The man holding the bellows is Humphrey Davy and Rumford is standing at the far right with a medal on his coat



Among Governor Wentworth's parties, or proposals for parties, was a scheme for a summer in the White Mountains which was to be half joy-ride and half scientific survey. But it never came about. Major Thompson went back to Concord, and there, at home on his wife's broad acres, we find him as a gentleman farmer. He calls them his own land, and today, if you inquire in Concord, you will find that her house is called his.

Upon an aristocrat so out of place, the Revolution, breaking loose, unchained those same under-dogs. They drove Thompson out of Concord, then out of the Province of New Hampshire, then into a sort of qualified arrest or restraint, then into the military lines of the Royal forces. He boarded an English man-of-war in Narragansett Bay and came around to Boston as a loyalist refugee and one of the efficient defenders of the town. Thence, with the deftness which we have praised already, he quietly moved back to England at the right time, carrying dispatches which introduced him into the right place. And it was a fat place, to be envied the young Colonial by every English placeman.

The thing which started the barking of democratic under-dogs against the young aristocrat was an incident about two deserters from the Royal forces. General Gage and Major Thompson were friends, and when two deserters from the British army arrived in Concord feeling like fish out of water and quite unwilling to remain among the Colonials, Thompson sent them back to Gage with a friendly request for clemency. But the consequence was a charge amounting in substance to one of treason. As it was expressed in the quaint form of the time, he was charged with "a suspicion of being inimical to American Liberties." His guilt is not important, for the common people of Concord had a cordial and universal belief that he was guilty and evidenced it by tendering him a shivaree, which is "a serenade of rough music with kettles, pans, tea trays, and the like . . . in mocking and derision . . . of unpopular persons generally." Powerful as the Walker connection and Thompson's other friends were in Concord and in New Hampshire, they advised him to run. Woburn was the place to go to, for there the "Committee of Correspondence and Safety" was dominated by Loammi Baldwin. At Woburn Thompson was subjected to something in the nature of a trial. The proceedings were complicated

and long drawn out. He appears to have been received with tolerance and to have been allowed his freedom. He convinced the local committee of his innocence; at any rate they certified that he had satisfied them "by the strongest assurances of his good intentions." He was present at the battle of Lexington, was with the American

army at Cambridge, and the official history of Harvard College expresses gratitude to him for being "instrumental in preserving the library and philosophical apparatus when the 'colleges' were converted into barracks." "College," in those days meant the buildings, and the institution was "The University at Cambridge."

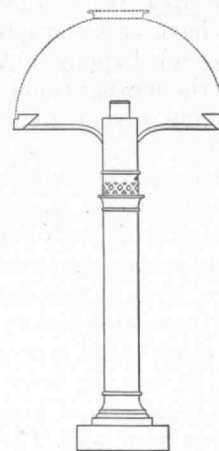
AND at Cambridge Thompson tried his charm and social skill upon George Washington and sought to become the commander of the American artillery. It may have been pique at his failure, it may have been a sound conviction that an aristocrat of his feelings was in the wrong place, or it may have been the conclusion that he would always be suspected. But, whatever the circumstances, we observe a marked contrast between Loammi Baldwin's complete verdict of acquittal and the flight which is the most conclusive of confessions. Thompson soon drove secretly to Narragansett Bay and there went on board the British frigate *Scarborough*. Thence he came around to Boston. When Boston was evacuated by the British troops he managed to be sent to England with dispatches, and again we have his own account of the successful advancement, polished, perhaps, by the French philosopher and friend whose words we quote "By the gracefulness of his manners he insinuated himself so far into the graces of Lord George Germaine that he took him into his employment."

He fell upon his feet, and he knew how to stay there. He soon held the position of under-secretary of state under Lord George, and we are told that his place was considered by the placemen worth seven thousand pounds sterling by the year. Perhaps this is magnified by the jealous, but it was a good place, and he stuck to it and did his work well. He was not only efficient, but he had a desire and a power to make others efficient. It is hard to think of him as the running-mate of the inefficient Lord George. Nero fiddling when Rome was burning has its parallel in Lord George week-ending when America was setting herself free. The pair must have been an odd one, Germaine, the useless aristocrat, balanced by Thompson, the deft and skilful genius. Here was an under-secretary of state who had the brains to understand the importance of a curious thing called a bayonet and, more than that, had the social skill and the diplomacy to break down the British habit of going without improvements and to secure the adoption of the bayonet as part of the equipment of the Guards themselves! The placeman not only did that, but also made a study of gunpowder and its efficiency which advanced knowledge and promoted operations both by sea and by land. And then, when the patron fell, the true gentleman



From the "Works of Rumford" published by the American Academy of Arts and Sciences

Rumford's drip coffee pot. Coffee connoisseurs should by all means consult his essay "The Excellent Qualities of Coffee"



From the "Works of Rumford" published by the American Academy of Arts and Sciences

This "table illuminator," first presented to the public in 1811, was one of the simpler contributions which Rumford made to the management of light

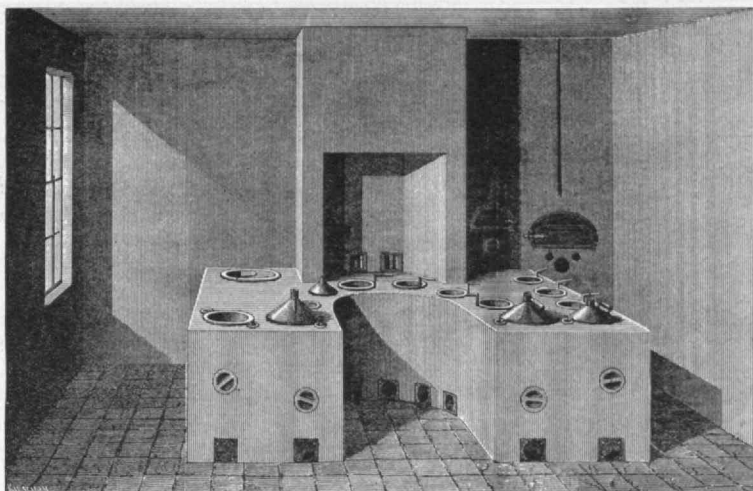
went back to America to fight. Incidentally, he invented a new code of signals, wrote with effect upon naval architecture, and received the unusual honor of election as a member of the Royal Society. And on the voyage out to America he continued his experiments with gunpowder.

He served in the south against our free-lance Marion, and he had an extended period of service in northern Long Island, where he behaved with a ruthless efficiency which has filled the local historian with querulous complaints. For instance, he had a gunner's eye for the right place to put a fort, and so at Huntington, finding the place of vantage occupied by a graveyard, he put the fort on the graveyard. The Meeting House lying convenient, he used it as material. The tombstones came in handy for fireplaces and ovens. Among the thousands of American histories written in unreasoning praise of particular localities, we find a monument of erudition known as "Prime's History of Long Island," and Mr. Prime tells us that he has "often heard old men testify from the evidence of their own eyes, that they had seen the loaves of bread drawn out of the ovens with the reversed inscriptions of the tombstones of their friends on the lower crust." The soldiers had good bread, and the regiment a good commander.

HE ENDED the war as a full Colonel holding the King's, and not a Provincial, commission, and was put upon half pay. When he was seeking his last promotion, we find him writing to the man above him who had the good things to give. He addresses "His Excellency Sir Guy Carlton, K. B., General and Commander-in-Chief of all His Majesty's forces in North America within the Colonies lying in the Atlantic Ocean from Nova Scotia to West Florida, inclusive, &c.," saying: "This rank to me is of infinite importance as I am going abroad in a short time with a view to foreign service. But the half pay is also an object, as I have little else to depend upon except my industry." Upon the conclusion of the war he returned to England. But we see nothing of his movements until we meet him crossing the Channel. By good luck for us he crossed in the same vessel as the immortal Gibbon, who writes to Lord Sheffield from Dover, September 17, 1783:

"The triumvirate of this memorable embarkation will consist of the grand Gibbon, Henry Laurens, Esq., President of Congress, and Mr. Secretary, Colonel, Admiral, Philosopher Thompson attended by three horses, who are not the most agreeable passengers."

With the three saddle-horses Colonel Thompson arrived at Boulogne and went thence to Strasbourg. The scene with Wentworth at Portsmouth repeats itself. There was a military review. And there was a French field marshal who had also rank, standing, and connection in Bavaria. Thompson went forward with a warm letter of introduction from the field marshal to the Elector of Bavaria. Then he took a look in at Vienna, had some thought of campaigning against the Turk as an Austrian soldier of fortune, thought better of that again, and in a few months was back in England, where



From the "Works of Rumford" published by the American Academy of Arts and Sciences

One of the "kitchen fireplaces" designed by Rumford

he applied to King George III for permission to enter the Bavarian military service. The stubborn king gave him not only permission, but a leg up, the rank of knighthood, which must have been of most substantial importance when Thompson presented himself upon the continent with that "view to foreign service." And not content with the rank itself, our new knight went to the Herald's Office and there purchased for himself upon the usual terms of cash down the right to use the arms of "the antient and respectable Family of Thompson of York." Thus secure from any confusion with the ancient and respectable family of Smith of Great Britain he returned to Bavaria and began his continental military life as colonel of a regiment of cavalry and general aide-de-camp to the Elector himself. He had half a palace assigned to him and a whole staff of servants. By 1788 he was major general and member of the Privy Council and head of the War Department. Then comes a curious story about the heraldic history of the Holy Roman Empire and B. Thompson gets his patent of nobility. A mere Elector of Bavaria is not enough of a sovereign to grant titles within the Empire. But while the Emperor's throne is vacant, one Elector becomes Vicar, or acting head of the Empire, and as such the Bavarian ruler became able to gratify his friends. B. Thompson of Woburn, Middlesex County, makes his last bow, and from now on we have Count Rumford.

WE MAY well pause here to consider what the man has come to be. He is just entering upon an extraordinary career of governing and of science, and he carries both forward, especially the latter, through his succeeding years. His most marked characteristic is that insatiable curiosity which is supposed to be the unmistakable mark of the Yankee. But it is also the curiosity which the modern philosophy of education considers to be the most essential quality for productive power. No person and no object passed under his eye without the most intense inquiry. The reason that he was successful in government and in science was that he had trained this genius of curiosity so that he inquired and philosophized about the very smallest of things, whether or no they had the surface appearance (*Continued on page 93*)

# THE TREND OF AFFAIRS

IN THIS SECTION: *Reducing Exercises for Fat Buildings* (77); *Non-Magnetic Watches* (79); *Vodka Cement and Wine Concrete* (81); *Giant Spectroscope* (81); *Survey of Schneider Cup Races* (78); *The Coconut Challenges the Cow* (76).

## Coconut Dairy

COPRA and coconut oil, which are among the principal exports of the Philippine Islands, the Dutch East Indies, and Ceylon, and of which the United States is a leading importer, are ordinarily thought of as the major benefits man derives from the coconut palm. It is, however, a versatile tree. The trunk yields a timber (identified in European commerce as porcupine wood); its heart, an ingredient of a salad; its bud, a vegetable (palm cabbage); its flower, a toddy; its leaf, material for fans and baskets. From the husk of its fruit, or nut, comes coir fiber for matting and cordage; from the shell, a charcoal; while the kernel, if shredded, finds its way into cakes and pies, providing it escapes its more common destiny of being dried to

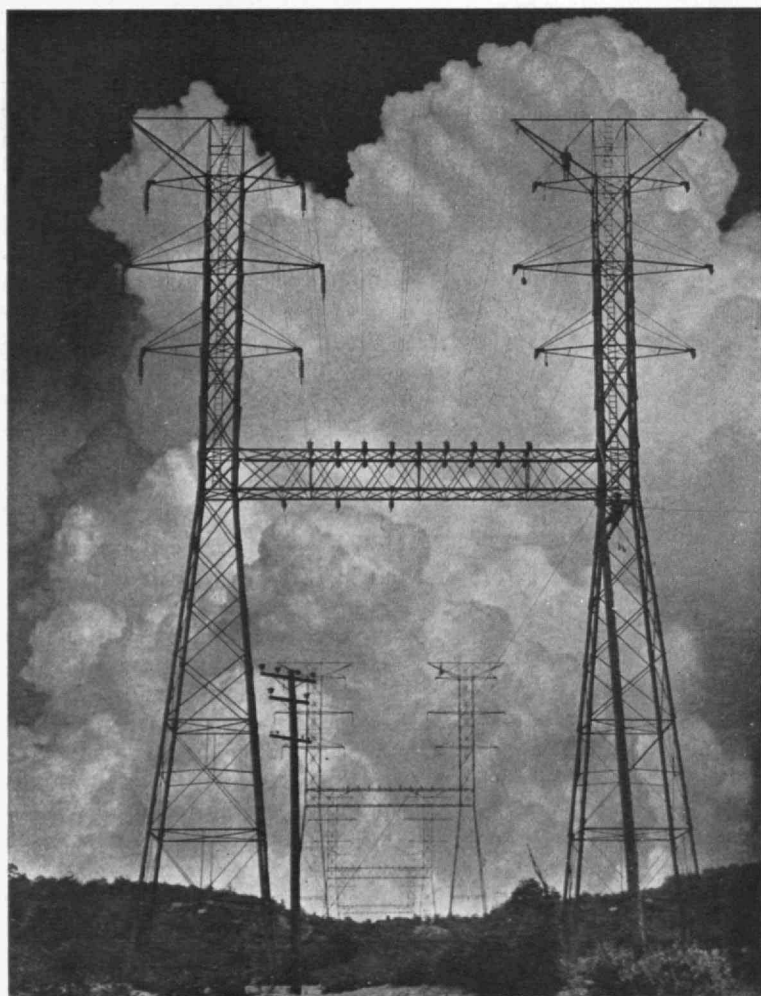
make copra. Copra is converted into coconut oil for soap and margarine manufacture, and into a residue, or "cake", which is an A-1 cattle food.

By way of the Philippines now comes a tale of *Cocos nucifera* put in competition with Guernsey cows and honey bees. Herbert Walker, one-time Supervising Sugar Technologist for the Sugar Centrals operated by the Philippine National Bank and, more recently, President of the Tropic Products Company of Manila, is responsible for this unique and paradoxical rivalry. His original inspiration came from sugar planters on the Island of Negros where hospitality includes the serving of an ancient Filipino delicacy, *Mata-mis-sa-bao*, meaning sweet in the shell. It is made by cooking the emulsion, or "cream," obtained by hand-pressing fresh coconut meat after adding native sugar. The commercial

possibilities of this "friendship sweet" led Mr. Walker to experiment in making it, but his progress was slow because, on standing a few days, the fat separated from the syrup and the mess turned rancid.

Unexpectedly, however, these disappointing results induced him to consider another possible product. Neighboring children and houseboys, feeding on the "leftovers" of his experiments, were making astonishing gains in weight. Knowing that fresh coconuts contain the same food properties as cows' milk, he decided that by diluting the fresh emulsion with the natural water in the coconut (to reduce overrichness), a vegetable "milk" might be compounded. With fresh cows' milk selling at 50 cents a quart, owing to the shortage of dairy herds in the Philippines, it was obvious that a coconut milk retailing for ten cents a quart might be promoted.

So his coconut dairy came about and, by months of effort and education, the output of a completely modernized plant with a battery of hydraulic presses and electrically operated shredders finds a ready market. The emulsion, extracted at a pressure of 3,000 pounds from shredded and sterilized coconut meat, is mixed with pasteurized coconut water; the combination being cooled and bottled in a refrigerator to offset the effects of tropic temperatures. Coconuts are almost sterile until opened and this property, plus the extreme care taken during the manufacturing process, is responsible for a bacterial count that averages about 400 to 100 cc. The caloric value of the coconut milk per 100 cc. is 68.5 as against 69.0 for cows' milk.



Rittase

The march of power



A four-month test, conducted by the Philippine Public Welfare Commission on 80 children, showed: first, that those fed coconut milk as a supplementary diet made practically the same gain in weight as those receiving cows' milk; second, that the 80 showed a gain of 28% to 32% over a group who received no milk. This report definitely put to rest claims by some of the Filipino medical groups that children in the Philippines did not need milk inasmuch as Nature had not provided the Islands with cows.

It also reverted Mr. Walker's attention to the native sweet, which problem has now been conquered by perfecting the first fat, sugar and water emulsion that will remain in suspension and not turn rancid. The base of the product is the same used in making coconut milk, the so-called "cream," as it comes from the "dairy's" presses, being run into steam-jacket, copper kettles and mixed with invert sugars. After cooking, when fairly cool, the resultant is packed in glass jars for the retail trade under the brand "Mandalay." Since it has the viscosity and color of unstrained honey, though its uses exceed those of ordinary bees' honey, the appropriate popular name of "coco-hon-ee" is also applied. It goes well on waffles or hot cakes and, besides, is excellent for fountain use, giving to sodas, milk shakes, and ice cream, the delicate and hitherto elusive, flavor of fresh coconuts. For three additional products the manufacture is varied slightly to make a light paste, which looks like crushed pineapple and is a topping for puddings or ice cream, and heavy and dark pastes suitable for confectionery makers.

### Wasteful Weight

MODERN structures, both movable and stationary, are suffering from overweight no less than a large portion of the people who use them. Buildings groan under surplus layers of fat — in the main consisting of fire insulation — while obese trains, automobiles, and ships waddle along secure in their portliness but prodigal in their waste.

"The Empire State Building," states one of its architects, "weighs 365,000 tons and is built to house about 25,000 persons. This means that it takes more than 14 tons of building to support a man, rather a striking demonstration of the disproportion between the weight of a modern building and the load it is intended to carry."

Nowhere has this engineering and architectural ineptitude been so self-evident as in the design and construction of floors. Present methods involve the use of materials in floor panels which result in a dead load in excess of any live load to be supported. Column stresses for dead loads in a multiple-story building are often two-thirds of the total stress. Since the only reason for constructing a building is to provide support for a live load, it is unfortunate that builders must now dedicate so much to useless weight. New and lighter materials, as well as more extensive knowledge of the strength of

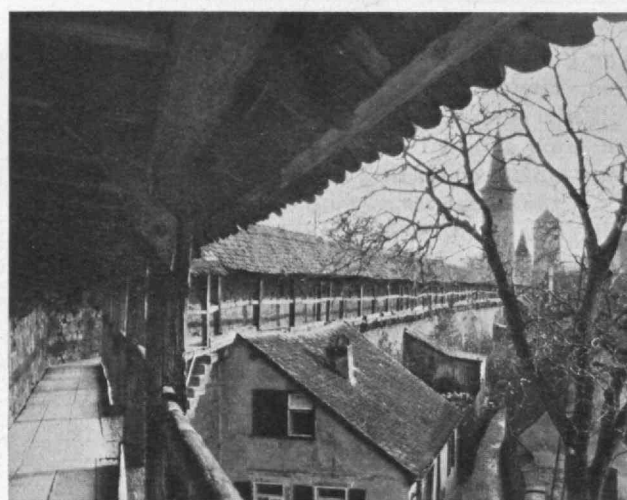


*A suggestion for yachtsmen. This ancient mongrel packet was snapped on the Bosphorus by James A. Patch, '00*

present materials and construction methods, are urgently needed. Fortunately, a pleasing response is in evidence, and welding furnishes a spectacular example of what can be done. The battledock steel floor, a child of the welding process, saves perhaps 25% in weight, and in the ingenious A. O. Smith Corporation Research Laboratory in Milwaukee, engineers have estimated that the dead load on each column is about 100,000 pounds less with battledock floors than it would have been had a floor of steel joists and concrete slab construction been used. Stating it in another form, battledock floors make it possible to increase the height of a building by one-quarter, without adding to the foundation load.

Advances such as this have pointed to a more extensive use of metal in buildings. The more intelligent and general use of metal is to be the hall mark of the new and better buildings, according to William F. Lamb, co-architect of the Empire State Building. "Some day we are going to be able to build our walls of metal, backed by insulating materials, and without the heavy masonry that loads down our steel skeletons." A metal apartment building, in fact, has already been designed for erection in Chicago. For a building of its height, the usual masonry walls are 14 inches thick and weigh 150 pounds per square foot. With insulation, the proposed metal walls are only one-quarter as thick and weigh only 12 pounds per square foot.

In addition to welding and the more general use of metals, many other new devices and techniques are being evolved. Steel joists, junior beams, built-up joists, and grid flat slabs have been devised for reducing the weight of floors. Aluminum, particularly in the form of its alloys, is being pushed as a structural material, and there are, of course, the aerated or expanded concretes, from 20% to 75% lighter than ordinary concrete and much more fire-resistant. Among these may be mentioned *porrete*, *cinder concrete*, and *aerocrete*. In another category fall *haydite*, a light, heat-resistant aggregate, *gypsum*, and bricks of diatomaceous earth.



The new and the old in German architecture: on the left, combination apartment house, store, and factory near Karlsruhe; on the right, the archers' gallery on the Rothenburg wall

An artificial pumice recently appeared on the German market. In the form of hollow blocks it is reported to be cheaper and lighter than brick.

In other fields than that of building construction, the fight against wasteful weight is being conducted. The Pullman Company is now building a sleeping car entirely of aluminum save for wheels, axles, brakes, and springs. It will be 25% to 40% lighter than comparable steel cars. Thirty-five aluminum electric cars already are in operation on the Indiana Railroad. In The Review last July, Mr. Othmar H. Ammann described how excess weight is being eliminated from suspension bridges by better design and the use of alloy steels. In the May issue, Mr. Harold E. Lobdell, '17, reported similar progress in locomotive design. In one vessel (S. S. *Carolinian*) welding saved one-fifth in weight and one-quarter in construction costs, besides adding 20,000 gallons to the cargo space.

The growing number of these lighter materials and weight-decreasing methods is evidence of an intelligent demand for less weight. By the time the physicist has given us a reasonably efficient electric light (present efficiency 5% to 10%), the engineers should have learned the art of reducing their structures to an economical but perfectly safe thinness.

### The Last of the Schneider Cup

IN 1912 M. Jacques Schneider, son of a wealthy gun manufacturer, presented to the *Fédération Aéronautique Internationale* a trophy to be awarded to the winner of an annual seaplane race. In September of this year the trophy was retired by Great Britain, which had fulfilled the condition of winning it three times within five consecutive contests. The first contest, in 1913, was won at Monaco by a plane which attained a speed of 45.25 miles an hour. In 1925, at Baltimore, Major James H. Doolittle, '24, won for the United States with a speed of 232.57 miles per hour. This year's contest winner hurtled around the course at 379.05 miles an hour, and later achieved an international straightaway speed record of 408.8 miles an hour, more than half the speed of sound.

M. Schneider died in poverty in 1928, but if the donor of the trophy decreased in affluence during the intervening years, the financial resources demanded of competitors certainly traveled in the opposite direction. At first the goal of private sportsmen of moderate means, success in the contest soon became a mark of distinction for powerful manufacturers of aircraft and finally the fiercely sought prize in a contest between national governments, draining heavily on their technical facilities, flying personnel, and public treasuries. During the year of Schneider's death, for example, the combined governments of England, France, Italy, and America must have spent well over \$5,000,000 in the hope of winning the trophy.

Possibly the attractiveness of the trophy itself, a group of statuary valued then at \$5,000, and the money prize of the same value were important to the first competitors. Certainly at the end the nations in pursuit were after prestige of military services, national engineering reputations, and the design data on high-speed flight so necessary for military aircraft.

The table below shows the increases in speed and horse power of the Schneider trophy winners since their first race in 1913.

	Speed in miles/hour	Horse power		Speed in miles/hour	Horse power
1913	45.75	160	1925	232.57	515
1914	86.80	100	1926	246.49	800
1920	107.00	550	1927	281.65	875
1921	111.00	200	1929	328.63	1,800*
1922	145.70	450	1931	379.05	2,400*
1923	177.38	465			

\* Exact horse power not made public.

A survey of the entire series is very interesting from a technical point of view. Since the record of 1923 the speed for seaplanes has been increasing more rapidly than for landplanes until now it stands almost 150 miles an hour above it. This seems at first an unnatural state of affairs due to an apparently greater air resistance caused by floats over that caused by a wheel landing gear. The reason lies in the fact that the required landing speed, between a third and a quarter of the top speed



realized, is much less dangerously negotiated on a surface of water than on an airport. The resistance of floats has also been found much less than was at first expected. Probably this year's Schneider winner, reëquipped as a land plane, would gain less than ten miles an hour by the change.

The same year, 1923 (marked by the entry of the American Navy, the first governmental participation), was also the first real advance in ultra-refinement of streamlining. It has been said by good authority that "today practically every aeroplane in the world which has a first-class speed performance conforms to the lines of those Curtiss racers of 1923."

Since that date progress has been largely through decrease of frontal area and increases of horse power of the engines, although the development of radiators built completely into the wing, with the smooth, metal, wing surface serving as the cooling area and the complete enclosing of the pilot in a transparent streamlined cowling, have also aided materially.

Remarkable engines have been built for these planes. Such is their refinement and complexity that the terrific loads placed on them usually render them valueless after a few hours' running. Although costing several hundreds of thousands of dollars, these power plants are usually expected to have a total useful life in the neighborhood of 12 or 15 hours and even so there are probably as many planes which have been forced out of the races of the last ten years by motor trouble as have been able to complete the course of 350 kilometers. No wonder hard pressed nations breathe easier at the retirement of the trophy.

### *The Reach Toward Exactness*

*Written by Frank A. Thas, '28*

**T**HESE latter days of split-second comparisons have demanded fine accuracy in

watches and precision instruments. Though this demand has been met to a remarkable degree, greater accuracy in timepieces has been sought through refinement in manufacture and exactness in adjustment rather than through invention of new designs.

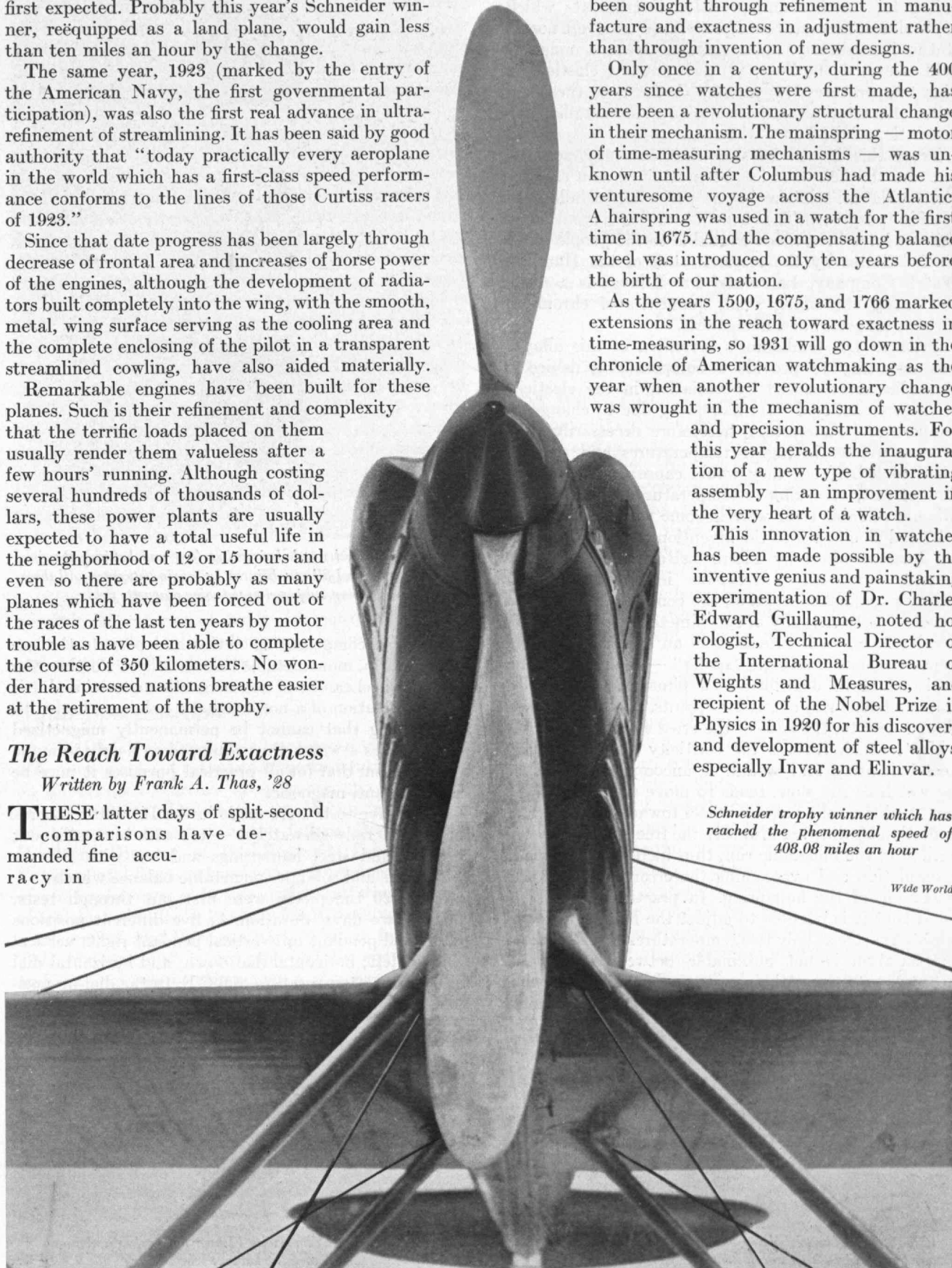
Only once in a century, during the 400 years since watches were first made, has there been a revolutionary structural change in their mechanism. The mainspring — motor of time-measuring mechanisms — was unknown until after Columbus had made his venturesome voyage across the Atlantic. A hairspring was used in a watch for the first time in 1675. And the compensating balance wheel was introduced only ten years before the birth of our nation.

As the years 1500, 1675, and 1766 marked extensions in the reach toward exactness in time-measuring, so 1931 will go down in the chronicle of American watchmaking as the year when another revolutionary change was wrought in the mechanism of watches and precision instruments. For this year heralds the inauguration of a new type of vibrating assembly — an improvement in the very heart of a watch.

This innovation in watches has been made possible by the inventive genius and painstaking experimentation of Dr. Charles Edward Guillaume, noted horologist, Technical Director of the International Bureau of Weights and Measures, and recipient of the Nobel Prize in Physics in 1920 for his discovery and development of steel alloys, especially Invar and Elinvar.

*Schneider trophy winner which has reached the phenomenal speed of 408.08 miles an hour*

*Wide World*





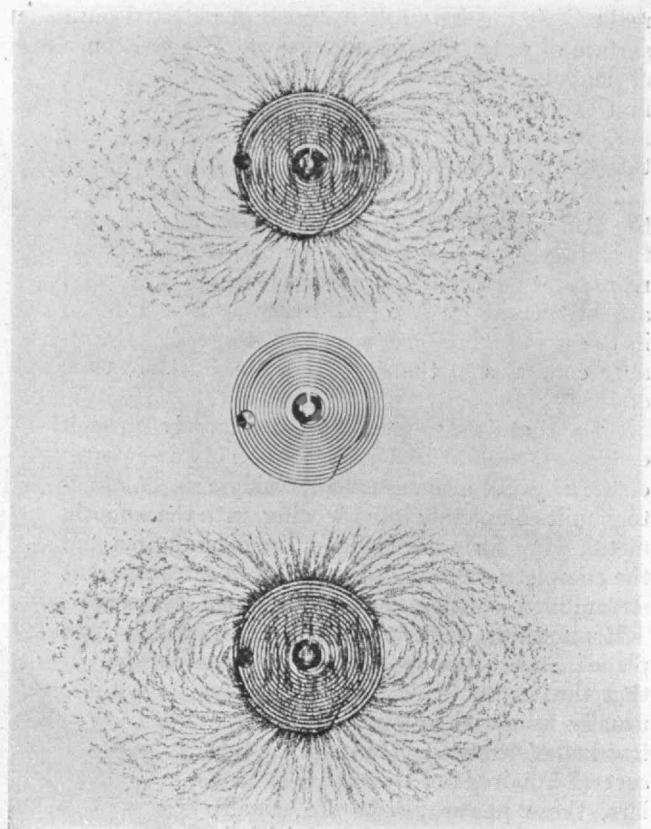
The latter alloy, Elinvar, is the basic factor in the present improvement in the vibrating assembly of a watch. It has made possible the production of a hairspring for watches and precision instruments which: (1) is almost immune to magnetism; (2) recovers normal status immediately upon removal from a magnetic field of even 3,600 lines; (3) does not lose elasticity in high temperatures; (4) permits (because of these and other characteristics) the use of a monometallic, non-magnetic, solid balance wheel.

From this it will be seen that not only accuracy but also simplification has been attained as a result of Dr. Guillaume's labors in the perfection of alloys for specific purposes. The benefits of his invention of Elinvar have been made available to the people of the United States by the research staff of the Hamilton Watch Company, Lancaster, Pa. Elinvar is a nickel steel alloy containing small quantities of chromium, carbon, tungsten, and manganese.

Prior to Dr. Guillaume's invention of this alloy it was necessary to provide a compensating device to neutralize error caused by variation in the elasticity of the conventional steel hairspring due to changes in temperature. Hairsprings, heretofore necessarily used, become weaker in higher temperatures and stronger when cooled. Hence they would cause a watch to run slow or fast, according to temperature changes, unless this unavoidable error were in some way compensated.

This difficulty led to the invention of the compensating balance wheel by Pierre LeRoy in 1766. In its present form, after successive improvements over LeRoy's original conception, the compensating balance wheel consists virtually of two bimetallic strips of semi-circular form, each extending in an opposite arc from respective ends of a single "spoke" — the balance arm. Or it might be described as a bimetallic wheel with brass-and-steel rim cut at two points, one on each side of, and near to, the ends of the cross arm.

Heat, which reduces the elasticity of the ordinary steel hairspring and would, if uncompensated, cause the watch to run slow, tends to move a portion of the weight of the split balance wheel toward the center of oscillation by drawing inwardly the free ends of the two sections of the bimetallic rim, thus increasing the speed of oscillation and overcoming the error caused by the weakening of the hairspring. In practice it has been found that it is possible to adjust the balance to compensate exactly at only two temperatures and that exact compensation is not obtainable between or beyond these two extremes. A hairspring made of Elinvar, being practically unaffected by temperature changes, requires

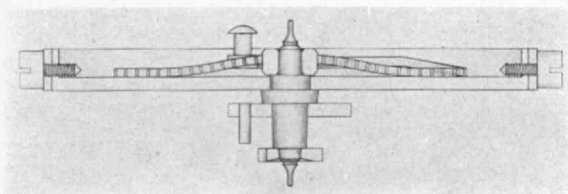


*Conventional steel watch hairspring (top and bottom) showing attraction for steel filings; Elinvar hairspring at center. All three have been subjected to the same magnetic field*

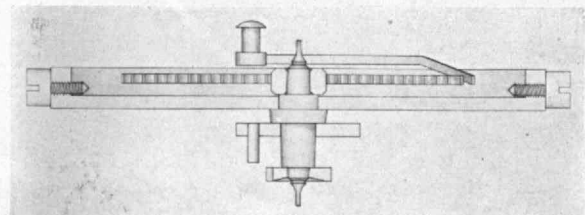
no complex compensating device and permits the use of a solid rim, monometallic balance wheel. Further, the balance wheel can be of non-magnetic material and it is this combination of a non-magnetic balance wheel with a hairspring that cannot be permanently magnetized which makes a watch thus equipped so nearly immune to magnetism that for all practical purposes it may be said to be anti-magnetic.

Exhaustive tests were made in the Hamilton laboratories of 20 railroad watches — ten with bimetallic, cut balances and steel hairsprings and ten with Elinvar hairsprings and solid, monometallic balance wheels.

These 20 timepieces were first put through tests, each of two days' duration, in five different positions — vertical pendant up; vertical pendant right; vertical pendant left; horizontal dial down; and horizontal dial up — all in a temperature of 68° F. In the dial-up position they were then tested at 41° and at 95°. Finally



*Cross section of watch balance with ordinary steel hairspring and bimetallic balance wheel, showing effect of magnetization*



*Cross section of balance with Elinvar hairspring and monometallic balance wheel*

they were again put through a second test in the pendant-up position for two days in a temperature of 68° (same as at the start) to determine how closely they repeated their performance after the previous tests which had occupied a period of two weeks. Again these 20 watches (ten of each type) were put through the same paces after having been subjected to direct current magnetic fields of 36, 360, and 3,600 lines per square inch respectively.

Before being magnetized, the watches in both groups showed practically the same error due to temperature changes. But at some point between a magnetizing field of 36 lines and 360 lines, the watches having conventional balances and steel hairsprings were sufficiently magnetized to be rendered useless as timekeepers. Those equipped with Elinvar hairsprings and non-magnetic, monometallic balances were not noticeably affected. Even after exposure to a magnetic field of 3,600 lines, these Elinvar watches resumed running and were still good timekeepers. The bimetallic watches stopped after being magnetized in a field of this strength.

It was noticed that a watch with monometallic balance and Elinvar hairspring (regulated to give perfect time before magnetizing) showed a loss of approximately six seconds a day after having been magnetized in a field of 3,600 lines. This loss was regular and the variation in daily rate by temperature changes and positions paralleled the original rate.

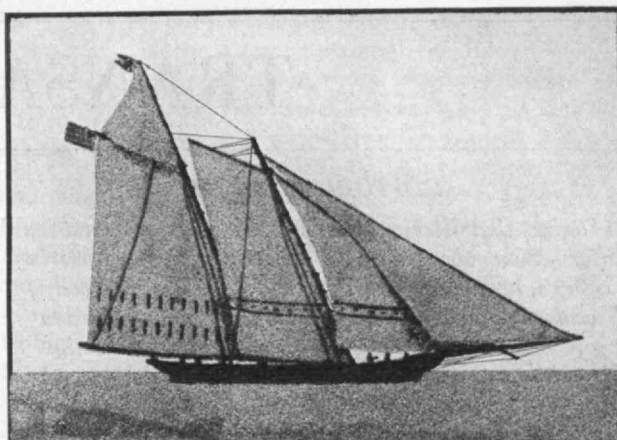
It has been several years since Dr. Guillaume made his notable discovery of the alloys mentioned above, yet we are just beginning to take full advantage of their possible uses. It is gratifying to note that well-organized research laboratories of today are constantly on the *qui vive* to reduce this lag between a scientific discovery and its practical application.

## Giant Spectroscope

**A**LTHOUGH Technology's new spectroscopic laboratory is not yet completed, the Institute is carrying on important researches in spectroscopy, particularly in the intensity of spectral lines. As an indication of what may be expected in the future, Dr. George R. Harrison, Director of the Research Laboratory of Experimental Physics, has developed an unusually large vacuum spectroscope. In this instrument, which consists of a 21-foot cylinder, it has been found possible to obtain a vacuum of less than one part of air in ten million. This high vacuum is accomplished by eight pumps, and the final step in exhaustion is obtained by boiling mercury.

In this large spectroscope studies are being carried on in the wave lengths of light in the very short ultraviolet region of the spectrum to learn more of the movements of electrons in the atom. The source of light for these experiments is an electrical discharge of approximately 30,000 volts between points composed of the element whose atoms are under investigation. Among these elements are vanadium and titanium.

The light beam strikes a grating containing 90,000 diamond-ruled lines of which there are 15,000 to an inch, and is reflected to a photographic plate upon which a record of the spectrum is made.



*From a picture drawn with sand of the schooner yacht, America, erstwhile winner for America against Great Britain. The original of this curious print, dated 1851, is in the possession of Professor Charles H. Porter, '02*

## Alcoholic Cement

**BY** WAY of rendering autumnal homage to Clio, we have been delving a bit into the life history of mortar and cements. At first glance the subject would seem forbiddingly dry, but our arduous researches have fetched up a few choice plums that bear passing along.

The Babylonians, it seems, were unacquainted with mortar and they used instead asphalt to join their stones. Excavations at the ruins of Nineveh and Babylon have proved that the stones joined by asphalt remained fixed together through thousands of years, though somehow we can imagine that Babylonian buildings oozed and crawled a little on hot summer afternoons.

The Egyptians used gypsum mortars; the Greeks and Romans, lime. There is a story, doubtless apocryphal, that some of the wonderfully hard Roman mortar was made with wine instead of water and that even white sugar, common salt, and other substances were additional ingredients.

The best story, though, comes from Russia, and it is authentic. It concerns the building of the Alexander Column in Leningrad, an engineering job of some magnitude. In the base of this column is a huge stone weighing about 400 tons. Naturally, difficulties were encountered in pushing this stone about, with the result that the foundation upon which it was to be moved was covered with a layer of a very peculiar mixture. "As the whole work had to be carried out in winter," stated the builder of the column, the architect, Montferrand, "I ordered the cement to be mixed with vodka, and added a quantity of soap equal to a tenth part of the whole mixture. Since the stone was not placed correctly at first, it had to be moved several times on the foundation. Only two capstans were used for this work, which was accomplished with the greatest ease, owing, of course, to the soap that I had added to the mixture." This story, we might add, is garnered from a recent communication from the Director of the Bureau for the Preservation of Monuments of Art and Antiquity of the Commissariat for Education of the Union of Socialist Soviet Republics. That sounds official enough!



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# TRANSATLANTIC

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## EDITORIAL NOTE

*In order that Review readers may receive first-hand information about foreign scientific and engineering affairs, two Technology professors, this year traveling and studying in Europe, have been commissioned to record their impressions in the form of monthly letters. The first of these are presented below; one by Dr. Norbert Wiener, and another by Dr. Tenney Davis, both well known to readers of this magazine.*

## Education and Science in England

YOUR correspondent, now that he has a semi-permanent roof over his head, and can look about him, wishes to give you the benefit of his observations and reflections in scientific places. First, Cambridge University—the original Cambridge—has changed very little in 18 years, at least as far as externals go. A few new college buildings, a modern block or two on Sidney Street, and a rather extensive building-up of the more remote environs of the town, are all that meet the eye. Of course, the personnel has undergone extensive gains and losses—MacTaggart is dead, Russell is lost to Cambridge, Hobson is retired; and on the other hand, those whom your correspondent remembers as lecturers in the early stages of their academic careers are carrying on the spirit of the place as professors, which connotes a much more restricted sub-class of the teaching staff than does the same term with us.

### LIFE AT CAMBRIDGE

For all this going and coming of individuals, the milieu is much the same as ever. There is the same tolerance of individual peculiarities, the same intensity of devotion to learning, the same somewhat monastically sheltered life. There may perhaps be a shade less of aristocratic coloring to the environment—the war has had the same consequences everywhere—but this coloring had already abated much before 1913. One is left with the impression that the quasi-English academic life, which our friends at Harvard Square are trying to introduce, represents an archaic tradition which is substantially obsolete over here, and that the English University, for all its adherence to ancient forms, is far more akin to our own free and easy scholarly contacts than to the Harvard Houses.

I dined as a guest in Hall at Trinity the other day—we did not dress for dinner—and found the gathering as informal as, and the meal far better than, any of our noontime lunches about the Table Round in the Faculty Room at M. I. T. They wear the garment of medieval form as they wear their own academic gowns—loose and comfortable—and do not parade it with the self-conscious ostentation of the parvenu.

I find English academic life most delightful, in England, but it is an article which will not bear sea transport.

### THE TREND IN PHYSICS

Among the gossip at table the other night, I heard that Bragg expects modern physics to assume a permanent form in some four years. Myself, I am rather skeptical, as almost the simplest of physical problems have not yet received even a satisfactory formulation. Ever since physics went off the gold standard in 1925, we have been going through a period of inflation and wild speculation, and if we want to bring this to a close, we shall have to junk the lion's share of our paper profits and be content with a paltry 30 cents on the dollar or something short of that.

I heard great praise of Hille's recent work at Princeton. In general, one curious criticism of American work in mathematics was that our men were too dead serious, and did not seem to be getting enough fun out of the game. They appear to regard analysis as a place where we are particularly weak, although this is perhaps due to the fact that the people to whom I was speaking are members of one of the strongest schools of analysis in the world—that of Hardy and Littlewood. Outside of this school, much of British mathematics seems to the American to be rather special, both in problem and in technique.

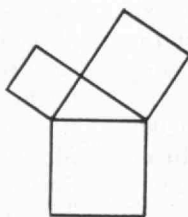
### B. A. A. S. MEETING

I was at the meeting in London of the British Association for the Advancement of Science. This seemed to bear a close family resemblance to meetings of the American Association—the same rush and confusion of registration, the same sententious general lectures.

The physics section put on a good show. R. W. Wood of Johns Hopkins spoke on one of the big days, with Niels Bohr, Knudsen, Aston, and others. He can present a lecture experiment in a most fascinating way. The following day was given to sundry predictions by Jeans and Eddington of the ultimate disruption of the universe by the De Sitter expansion, and to lamentations as to the decreased time-scale thus yielded.

The physicists of the world had a long two weeks of it. The Faraday celebration and the meeting of the British Association were followed here at Cambridge by a Clerk-Maxwell celebration with papers both personal and scientific by Sir J. J. Thomson, Jeans, Planck, Bohr, and others.

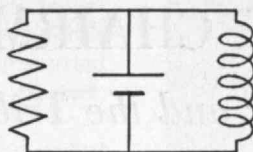
Through the courtesy of Commander Appleyard, I have examined superficially the Oliver Heaviside correspondence at the Institute of Electrical Engineers. It is a marvelous collection. I learned that the Preece-Heaviside controversy, which cost Heaviside so much during his lifetime and Preece so much in what concerns his permanent reputation, was not purely





scientific in origin, but dated back to their youth together at the Great Northern Telegraph Company's cable station at Newcastle. I shall discuss this Heavyside material more fully in a future letter.

NORBERT WIENER



On Monday afternoon the delegates met in the amphitheater of the Royal Institution, the same room where Faraday lectured, the same lecture table in front of them, and were there received by the officers of the Society. Eleven new foreign

honorary members were named; among them, four Americans, Howard McClenahan, Michael Pupin, Elihu Thomson, and R. W. Wood. In the evening at a commemorative meeting in Queen's Hall, we heard speeches, which were also broadcast, by Ramsay MacDonald; Sir William Bragg, the Marquis Marconi; and Professors Elihu Thomson, Zeeman, and Debye. On Tuesday and Wednesday the Royal Institution arranged trips around London, to Windsor Castle, and so on, for the delegates and guests. Sir William Bragg several times repeated his fascinating lecture on Faraday's discoveries, speaking at the same table where Faraday used to speak and demonstrating the experiments in part with the same apparatus.

Tuesday evening there was a formal reception to delegates and guests at the Royal Institution, and historic apparatus of Faraday, Davy, Rumford, Dewar, and Rayleigh was exhibited in the ambulatory, back of the amphitheater, as well as personal mementos of Faraday, the Bible which he bound himself and used and annotated, decorations which he received, pieces of jewelry which he gave to his wife, and the little box-wood model, representing the lines of force around a conductor, which he habitually carried in his pocket and held in his hand while lecturing.

Wednesday, the Exposition at Queen's Hall opened. Faraday's diaries were exhibited and his electrical and chemical apparatus was on view, the apparatus which he used in discovering the laws of electrolysis, and a sample of the original benzene sealed up in a small glass tube.

On Thursday afternoon, the delegates were the guests at a garden party at Busby House and were given an opportunity to visit the National Physical Laboratory. A reception in the evening in the rooms of the Royal Society provided another opportunity for conversation with men of science from everywhere, but an opportunity which would have been embraced more readily if so many epoch-making objects of the history of science had not been exposed for examination. Faraday's diary and commonplace book lay open on the table and could be handled. There was Hawksbee's air pump, Cavendish's balance, Priestley's electrical machine, a collection of radiometers which belonged to Crookes. There were manuscripts of Newton, Boyle, Hooke, and others, and everywhere paintings of men whose names are chapter headings in the history of science. On Friday evening His Majesty's Government entertained the delegates with a dinner at the new Dorchester Hotel, a fine dinner, a dinner impossibly fine to an Eighteenth Amendment, Twentieth Century, American hotel. There were speeches by the Marquis of Reading, who presided, by Sir Robert Robertson, and by Professors McClenahan and Sem Saeland, all in praise of Faraday and, in the case of the last two speakers, in praise of British hospitality as well.

TENNEY L. DAVIS

## The Faraday Celebrations

ON AUGUST 9, 1831, Michael Faraday discovered the principle of electromagnetic induction, the principle which makes possible the long-distance transmission of power and the production of the high frequencies which are used in radio—to mention only two of its important applications. This discovery and Faraday's other discoveries in electricity, in particular that which led to machines for producing electricity from motion, have altered the whole face of our civilization. Among the things which we have and use and do which our grandfathers didn't, there is scarcely one which does not involve a principle which was discovered by Michael Faraday.

Joseph Henry of the Smithsonian Institution probably discovered electromagnetic induction before Faraday, but he delayed in the publication of his observation. Neither Henry nor Faraday would probably have made the discovery except for the earlier discoveries of Ampère, Arago, and Oersted. It was known that a wire carrying a current causes movement in a magnetic needle, and, conversely, that a magnet causes movement in a conductor carrying a current. It was known that wires carrying current produce motion in one another. There existed some sort of relationship between electricity and magnetism and motion. A bar of iron lying within a coil of wire became magnetized if a current of electricity was passed through the coil. But a magnet lying within a coil of wire did not set up a continuous current in the coil. Faraday discovered, however, that the motion of the magnet in and out of the coil produced momentary currents. In his classic experiment, Faraday wound two coils on a ring of soft iron and found that a momentary current was produced in one of them when an electric circuit was made or broken through the other.

In celebration of Faraday's discovery, the Royal Institution of Great Britain entertained guests and delegates during the week of September 21. More than 200 delegates attended from the leading universities and academies of the whole world. The Institute of Electrical Engineers met in London at the same time and opened in the Albert Hall an Electrical Exposition in which Faraday's apparatus was shown and his experiments and those of others were demonstrated, and their later applications and developments exhibited. The principal public buildings of London were flood-lighted at night. Many of the speeches were broadcast, among them, Sir William Bragg's lucid account of the simple and fundamental experiments of Faraday. Portraits of Faraday were exhibited in the shops. Posters of Faraday were on display in the subways, on busses, and on billboards. The London *Times* published a supplement, fully illustrated, and containing articles on Faraday, his discoveries, and the consequences of his discoveries.

# THE DEATH OF CHAIRMAN STRATTON

## *His Notable Career and the Tributes Paid to Him*

FOR the fourth time in its history, the Institute of Technology is called upon to mourn the loss of a leader removed by death, suddenly and in the fullness of his powers. Rogers, Walker, and Maclaurin died in the midst of their great labors and now Samuel Wesley Stratton joins that illustrious group. On Sunday night, October 18, at 7:30, he died almost instantly as a result of coronary occlusion.

Death came dramatically. He was dictating a tribute to his friend and contemporary, Thomas A. Edison, who had died that morning. In the midst of a sentence bearing tribute to Mr. Edison, Dr. Stratton slumped over. Only a week before, he had returned from a trip to England where he attended the Faraday Centennial celebration. To his friends and associates he seemed extraordinarily well and happy after this trip and a very pleasant summer. On his 70th birthday, July 18 last, he was presented with a huge portfolio of congratulatory letters from friends all over the world. And it was in the exuberance of that birthday celebration that he was led to declare that he had enough work scheduled to keep him busy until he reached 100.

His funeral was held at Trinity Church, Boston, at 2:30, Wednesday, October 21. The officiating clergymen were the Reverend Arthur L. Kinsolving, Rector of Trinity Church; and Dr. Stratton's intimate friend, the Reverend J. S. Moses, Rector of the Church of the Redeemer, of Brookline, and Bishop William Lawrence.

The honorary pall-bearers at the funeral were: F. R. Hart, '89, C. T. Main, '76, Everett Morss, '85, Gerard Swope, '95, Elihu Thomson, E. S. Webster, '88, and President Compton, all of whom are members of the Executive Committee of the Corporation of Technology; J. E. Aldred, F. W. Fabyan, '93, W. S. Forbes, '93, J. R. Freeman, '76, President A. Lawrence Lowell of Harvard University, C. A. Stone, '88, all members of the Corporation; Capt. W. S. Anderson, U. S. N., G. K. Burgess, '96, Director of the Bureau of Standards; Bradley Dewey, '09, President of the Alumni Association; Professors J. R. Jack, S. C. Prescott, '94, and F. S. Woods, Chairman of the Faculty; DeW. C. DeWolf, representing Governor Ely; General Allston Hamilton, War Department; and Admiral L. M. Nulton, U. S. N.

### FROM THE PRESIDENT OF THE ALUMNI ASSOCIATION

*Dr. Stratton's loss is a great blow to all of us. He came to Technology from a great institution of his own founding and soon taught us of his worth and his whole-hearted loyalty to Technology. At a difficult post-war time, when science and industry were forging ahead together and the problems of technical education were multiplied, he brought to his work a wonderful ability as a promoter of research. He tided Technology over a most difficult period and will be remembered by all of us as a man who was fearlessly outspoken but at the same time fair and ever helpful to those about him.*

BRADLEY DEWEY, '09

Twelve prominent undergraduates were active pall-bearers. They were: D. B. Gilman, '32, President of the Senior Class; C. M. Chase, '32, General Manager of *T. E. N.*; T. B. Rhines, '32, President of the Athletic Association; H. D. Humphreys, '34, President of the Sophomore Class; R. G. McKay, '33, President of the Junior Class; L. P. Leino, '32, Chairman of the Dormitory Committee; F. M. Moss, '32, President of the Architectural Student Council; R. R. Hall, '33, President of the Technology Christian Association; W. H. Barker, '32, Business Manager of *The Tech*, C. M. Thayer, '32, General Manager of *The Tech*, J. E. Harper, Jr., '32, General Manager of *Voo Doo*, and T. R. Heim, '32, General Manager of *Technique*.

### *The Memorial Meeting at the Institute*

AT TWELVE o'clock preceding the funeral, the entire staff of the Institute convened in Room 10-250 to hear memorials presented by President Compton and Professor S. C. Prescott, '94. Professor F. S. Woods presided as Chairman of the Faculty.

#### PRESIDENT COMPTON'S TRIBUTE

DR. COMPTON spoke as follows:

"This occasion brings vividly to my mind, by contrast, an occasion at which most of you were present, about 18 months ago in this room, when Dr. Stratton introduced me to you as his new colleague. Little did we then think that I would, in this same spot, so soon reply to his welcome of me by expressing my farewell to him. Throughout this brief interval he has encouraged me, advised me, given me support and freedom of action, yet without violating his own unflinching sense of what should be done. I wish to bear tribute to his greatness and fundamental kindness of character.

"At such a time as this we all want to pay tribute to Dr. Stratton as a personal friend and colleague. It is, however, particularly appropriate that I should take this opportunity to review those distinguishing traits of character and those ideals which are his real personality and which will continue to live, for by keeping in mind these things we can best progress in the directions in which he would have led us had his life and vigor been spared. I should like, therefore, briefly to mention three of Dr. Stratton's characteristics which have seemed to me most to distinguish him.

"As the first characteristic I would call attention to Dr. Stratton's unassuming and generous spirit. Before I knew him intimately, I knew of this characteristic through my many friends who were among the younger members of the staff of the Bureau of Standards. They told me of the great personal interest which he took in their work, of his help and frequently major collaboration, yet of his refusal to take any personal credit for the results achieved or to allow his name to appear on the



published reports. He had only two objectives, to get the results and to give the younger men every possible opportunity and encouragement. Once last year he told me a bit of his early experience which may, in part, explain this attitude.

"Early in his career as a physicist he had collaborated (and done most of the work) on an experiment that attracted world-wide attention. The work was announced and published under the senior collaborator's name, without mention of the younger man. Though Dr. Stratton has continued to love and admire that senior collaborator, this circumstance hurt him so deeply that he vowed to himself that he would never, in all his life, allow himself even to come under a suspicion of claiming credit for anything which might in any way be attributable to another.

"The second characteristic which has impressed me has been Dr. Stratton's complete absorption in his work and plans. In one sense we may say that he was single-minded. This does not mean that he was narrow-minded, because this is far from the case. But all his interests were closely tied together in his main objective, which was the better development and utilization of science in the service of man, particularly in industry. For example, he was a connoisseur and collector of rare china, but this was but one aspect of his interest and activity in improving the ceramic art. He was similarly fond of rare and exquisite tapestries, but this again was associated with his work in bringing science to the aid of the textile industry. He was an enthusiast over tools of precision and frequently found his recreation in his workshop. But this was because he saw in tools an important agency for making scientific discoveries.

"One of his two conversations with me since his return last week from England also illustrates this point. It had to do with the customs and organization of the English universities. He was particularly interested in the differences between their and our customs and organization, but it was very evident that he was thinking about these and weighing them as to their advantage or disadvantage with respect to the objectives of service by science to industry.

"His second conversation illustrates the third and last characteristic which has impressed me more than all the others: the consistency of his life and thought. He had a definite ideal and objective. Everything in his life was valued as good or bad according as it led toward or away from this ideal. He was perhaps unsympathetic, and certainly impatient, with things or people whose influence ran contrary to his ideal. Anything which blocked the path toward the ideal irritated him, just as anything which led toward it received his full support. All this was essentially impersonal. It was the only consistent reaction of a mind so devoted and absorbed in working for the great ideal in which he wholeheartedly believed that no conflicting or ambiguous attitude seemed possible or worthy of defense. In this second conversation to which I referred, he discussed the establishment and strengthening of certain lines of study and research, whose treatment is complicated by lack of precedent or personnel. He had seen striking evidences of the importance and success of this line of work in certain foreign countries and insisted that we must



M. I. T. Photo

*Portrait of Dr. Stratton by Sir Philip de Laszlo as it was hung in the Lobby of the Institute after his death. This portrait, by the famous artist, was Dr. Stratton's favorite*

not let our precedents, regulations, or limitations of any sort stand in the way of making a rapid and important advance in these directions.

"In all this, gentlemen, we have a picture of a remarkable character. I doubt if any of us has ever known a man whose whole life has been so consistent, straightforward, and unswerving in its devotion to a particular form of public service and which has been carried on with such a complete elimination of self-interest. We mark today the passing of a great man. At the same time we recognize the lasting importance of those things which were the mainspring of his life, and we are happy that our position as his colleagues gives us the opportunity to 'carry on.'

"In conclusion I want to add this very brief personal tribute. Having always respected and admired Dr. Stratton for his accomplishments and because of what I knew to be the feelings toward him on the part of his colleagues, I have come, during the past year and a half of close acquaintance, to love him, almost as a father. I have had the opportunity to go behind his reserve and make some contact with his rich and affectionate spirit which to know was to love."

#### FROM THE CHAIRMAN OF THE FACULTY

*It is with profound grief, and a sense of personal loss, that we of the faculty learn of the death of Dr. Stratton. He leaves a proud record as scientist and administrator. In particular, under his guidance as President, the Institute has taken many a forward step, the effect of which will be lasting. His wisdom and council will be greatly missed in Institute affairs.*

F. S. WOODS



## Professor Prescott's Tribute

"THE occasion which brings us together today is indeed a sad one, a time in which our feelings of deep sorrow and personal loss and our sense of loss to Technology are closely interwoven. A great man and a great friend has been taken from us. This is not the time nor an appropriate occasion to attempt to give any evaluation of what Dr. Stratton's remarkable life has meant to the sciences of which he was so conspicuous an exponent, or to the Institute which he so faithfully and loyally served. We are still too near to the event which has wounded us so grievously, still too stricken and benumbed by the suddenness and shock of his passing from his wonted place among us, to be able to speak calmly of his many useful services here and elsewhere.

"We can only, with faltering words and heavy hearts, pay tribute to his great character as a man, to his loyalty and steadfastness as a friend, to his intense devotion to the school he loved and for which he zealously labored, and to his constant efforts to help his fellow men.

"It is impossible to speak of him here without a deeply personal note, and I know that because of similar association on the part of many of you, my colleagues, you will pardon any references to my own experiences as I try in my poor way to do honor to one who has greatly lived, and whom we have greatly loved and respected. Like an inrushing tide, the waves of memory flood into our minds today. We recall those warm, friendly attributes, the breadth of his interests and knowledge, and that integrity of leadership which promoted the happy personal relations with him which all of us, in greater or less degree, have enjoyed in the years since he came to us in an official capacity.

"We cannot think of him now merely as a high official, for that implies a position of dictation and command, and a separation and aloofness which actually

never existed. No man was ever more truly a colleague and co-worker, an elder brother and generous-hearted friend. And no man ever played the game of life, either as private or official, with its manifold human relations, more cleanly, fairly or straightforwardly than he.

"It happens to have been my good fortune to be closely associated with Dr. Stratton throughout almost the whole of his life at the Institute. I shall never forget the first time I saw him, when across a reception room and before I had ever spoken to him, I noted his kindly but searching blue-gray eyes, his illuminating smile, and the firm set of his head. Instantly, I inwardly felt that here was a friendly and sincere man of sterling character, wise but not hasty in judgment, and fine and generous impulses — a man, in our New England country phrase, 'who was safe to tie to.' Later, in the relations of a newly appointed department head, needing counsel and advice, and still more during three years as the spokesman for the Alumni Association, and then as Chairman of this Faculty, and of some of its special committees, I was privileged to have frequent and intimate contact with him. Perhaps the similarity of our boyhood experiences gave us, at the outset, a common basis of understanding and sympathy and opened the way to a deeper personal relation, and what I may call mutual spiritual response. Perhaps it was an unexpressed faith in each other, and tacit recognition of that nameless something that draws a man to his chief, or men to each other in relation closer than blood kinship. Of this I cannot say, but I found in him comradeship untainted by favoritism, loyalty which could withstand differences of opinion, a friendship steadfast, sincere, and sure.

"Those who knew him well early discovered that in him there were depths of feeling which were not plumbed by the casual acquaintance — a broad and vital human sympathy, a keen but kindly humor, and a deep dislike of sham and ostentation.

"There was an innate shyness in his nature which was sometimes falsely interpreted as indifference by those who did not look beneath the thin veneer of natural reserve. Once this slight barrier was broken through, the warm, gracious, generous nature of the man became apparent. No one could have close association with him without finding that besides being a prodigious worker, he had a responsive heart, a high sense of honor and character, a mind that could vigorously disagree without rancor, and a spirit deeply imbued with loyalty to the cause he espoused. It was these qualities of heart and brain — the very humanness of the man — that made him so idolized by those, old or young, who had had the privilege of working side by side with him and sharing in his industry, his hopes and achievements, and his projects for greater things.

"Few of us, if any, can ever know fully how greatly he loved young men, nor how many of them, whether among our own students or elsewhere, he aided by his fatherly counsel and by his efforts, often in hidden yet effective ways, for their welfare and happiness. In these ministrations as in other matters, his extreme modesty and dislike of anything savoring of personal publicity prevented any widespread knowledge of his many generous actions.

### FROM THE STUDENT BODY

*The undergraduates of the Massachusetts Institute of Technology have suffered an irreparable loss in the death of their esteemed Chairman and former President, Dr. Samuel Wesley Stratton. During his entire career at the Institute he showed an unflagging interest in the affairs of the student body, and his official responsibilities were never too heavy nor the business of his office too pressing to prevent him from receiving any one of us who sought his help, advice, or counsel.*

*It was his custom each year to entertain in his home our student governing body, the Institute Committee, as well as the entire freshman class, the occupants of the dormitories, the foreign student group, and many other organizations. Indeed, few students were denied the opportunity of meeting him informally.*

*Because of his enthusiastic support and sympathetic cooperation, our undergraduate activities prospered under his régime as never before, and our extra-curricular life was deeply enriched. In his official capacity as President of the Institute, he acted as friend and counselor of the undergraduate body in a manner that commanded the admiration and won the hearts of all those who came in contact with him.*

*I speak for the entire student body in expressing the sorrow that prevails throughout our ranks.*

DONALD GILMAN, '31  
President, Institute Committee

"The same diffidence, modesty, and almost self-depreciation, made it difficult for him to speak publicly with the effectiveness which characterized less formal expression of his ideas in conversation or in small group conferences.

"It is almost three years to a day, October 17, 1928, since in this room and before this Faculty he received the award of the Cross of the Legion of Honor of France for distinguished service. With characteristic modesty he dreaded the event, as he did all public functions in his own behalf, lest it should seem that he thought too highly of his fitness for the honor. On that day he received, from one who was not present, the following lines of tribute, which perhaps characterize some of those qualities which endeared him to us.

Lines to Samuel W. Stratton

*On receiving the Cross of the Legion of Honor,  
October 17, 1928*

Wise Knight of Science, France has our regard  
That, in the full tide of your great career,  
You should receive the Cross and accolade  
Amid the plaudits of your *confrères* here.

So modestly you bear the bays you earn,  
So simply take the praises of your name,  
I half suspect you felt surprise to learn  
That on your breast this Cross should blaze your fame.

I wonder if the dreams, the boyhood thought,  
Of fame or greatness that *might be* your own,  
Visioned such heights as Life itself has brought,  
Or half the Triumph you have really known.

Yet in those days of fearless sturdy youth  
Were somehow laid foundations strong and sure;  
The consecration to the search for Truth,  
The zeal that made this triumph so secure.

Triumph that came from patient labors wrought  
Unmindful of reward or shouted praise;  
The rich fruition of long nights of thought,  
Of failures conquered, and of tireless days.

Triumph without sharp competition's hate,  
Or ruthless use of lesser men for gain,  
Rather by helping them to high estate  
Your own was lifted to this loftier plane.

Proudly we know this honor nobly won,  
Symbol of dauntless faith through gain or loss,  
Of high emprise and human service done.  
The Cross adorns you — You adorn the Cross.

"Now he is gone from us — whether in far realms of space his great steadfast spirit finds new spheres of useful service, or whether here in this room his unseen presence urges us today to carry on the great work he loved and in which we all were proud to share, we cannot know. This we know, that while life shall last and human affection and honor for noble and manly character shall survive in us, we shall hold him in deep and loving remembrance as a great servant of his people, a great leader and a great friend. What more fitting epitaph could be his than the last complete sentence to fall from



Dr. Stratton at his desk. After his funeral, the body lay in state at Trinity Church, and for hours people filed by to see him for the last time. Chief among the floral designs was a laurel wreath sent by President Hoover, long a friend of Dr. Stratton

his lips, as he spoke of another, 'His life and his accomplishments have been, and will be for many generations to come, the inspiration of youth.'

### A Sketch of His Life

DR. STRATTON was born at Litchfield, Ill., on July 18, 1861, the son of Samuel and Mary B. (Webster) Stratton. His boyhood was spent on his father's farm and he early showed a keen interest in mechanical devices. It was his delight to investigate the various farm machines in an attempt to find out how they worked. This great interest in machinery and a natural aptitude for practical application of what he learned by his own youthful experiments awakened in him the desire for a technical education. He took full advantage of his school days in the country and then entered the University of Illinois. The time he could spare from his studies was spent in earning money to enable him to carry on his education, and in 1884 he was awarded the degree of bachelor of science in mechanical engineering.

His early years in the healthful life of a farm gave Dr. Stratton a rugged constitution. He was a tireless worker, and was particularly happy when he found time to



retire to his private laboratory for scientific investigations. He was a man of medium height and sturdy frame, with keen, blue-gray eyes and a smile which broke into a friendly chuckle during his conversations. Dr. Stratton had a keen sense of humor and enjoyed anecdotes.

From 1886 to 1889 he was instructor of mathematics and physics at the University of Illinois. He was promoted to assistant professor of physics in 1889, and occupied the chair of professor of physics and electrical engineering from 1889 to 1892. During that year he left the University of Illinois to become assistant professor of physics at the University of Chicago, being raised to associate professor in 1895, and to professor in 1898.

For a number of years Dr. Stratton had been interested in the establishment of a National Bureau of Standards at Washington, and in 1900 he brought this matter to the attention of Lyman J. Gage, who was then Secretary of the Treasury. Dr. Stratton was asked to draft a bill for the establishment of such a bureau, and it was largely through his efforts in bringing the matter before Congress that the bill was passed on March 3, 1901. He was then appointed Director of the new bureau and served in that position until 1923. The Bureau of Standards grew from a very small institution, employing a few workers in science and housed in temporary quarters near the Capitol, to what is considered the foremost research institution in America, with a staff of 900 employees and a large group of splendid buildings.

In 1923 Dr. Stratton was asked to become President of the Institute, and from that time until 1930 he served with distinction as the chief administrator of the Institute. In 1930, at his suggestion, the Corporation decided to divide the heavy responsibilities of administration of the Institute, and Dr. Karl T. Compton, noted physicist, became President. Dr. Stratton then became Chairman of the Corporation, a position which he occupied at the time of his death.

Dr. Stratton graduated from the military course at the University of Illinois with the rank of Captain, and from 1895 to 1901 served first as Ensign, then as Lieutenant Jr. Grade, Lieutenant, and finally as Lieutenant Commander of the Illinois Naval Militia. During the Spanish-American War he served from May to November, 1898, as Lieutenant in the U. S. Navy, and from 1904 to 1912 held the rank of Commander of the District of Columbia Naval Militia.

In addition to the degree of Bachelor of Science from Illinois, Dr. Stratton held the honorary degree of Doctor of Engineering from the University of Illinois, 1903, and the honorary degree of Doctor of Science from the University of Pittsburgh, 1903; the University of Cambridge, England, 1909; and Yale University, 1919. He was an officer of the Legion of Honor, and received the Elliott Cresson Medal of the Franklin Institute and the Welfare Medal of the National Academy of Sciences. He was an honorary member of the Society of Sigma Xi, Tau Beta Pi, Phi Beta Kappa, and was also a member of the Council of National Defence, National Advisory Committee for Aeronautics, the International Committee on Weights and Measures, Interdepartmental Board on Ice Observation

and Patrol, American Section of the Standardization Committee of the International Chamber of Commerce, Federal Specifications Board, National Screw Thread Commission, and was U. S. Delegate to the International Electrical Congresses, St. Louis, 1904, and London, 1909.

Dr. Stratton was a member of the following scientific and engineering societies: National Academy of Sciences, National Research Council, American Philosophical Society, American Association for the Advancement of Science, Washington Academy of Sciences, American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Society for Testing Materials, National Aeronautical Association of U. S. A., and an honorary member of the Optical Society of America. He was also a member of the American Physical Society and the American Engineering Standards Committee.

Dr. Stratton is survived by three sisters, Mrs. C. S. Newcomb and Miss M. E. Stratton of Pasadena, Calif., and Mrs. G. M. Hobbs of Chicago.

### Editorial Comment

THE Boston newspapers, as well as many others, carried editorials on Dr. Stratton. It would be fitting to reprint all of these but we select only two; first one from the *Boston Post* and finally one from the *Boston Evening Transcript*.

"The death of Samuel W. Stratton, former President of Technology and Chairman of its board of directors, coming as it did with startling suddenness, deprives the community and the nation of another fine servant. Dr. Stratton's life was one of large accomplishment before he came here to preside over the destinies of the renowned Institute across the Charles, and since his advent here he had added to his fame and his great measure of usefulness. That his final call came when he was discussing the career of the great Edison, whom he was privileged to call friend and whom he extremely admired, adds a touch of drama to his passing which he, with all his dislike of the ostentatious, would have deplored. In science and in the superb training of youth, Dr. Stratton had few equals. Boston and M. I. T. will miss him sadly."

The *Boston Evening Transcript* commented as follows: "The lasting fame of Samuel W. Stratton will rest upon his creation of the United States Bureau of Standards. It was, as he was fond of saying, 'only a blueberry patch' when he selected the slightly eminence it crowns off Connecticut Avenue in Washington, and he lived to see it become an institution absolutely unique in the service it has rendered the business and the scientific world. Fundamentally, its function was to maintain standards of accuracy in weights, measures, and so forth, for the aid of national and state governments and educational institutions, but Dr. Stratton so broadened its operation that it became the arbiter of quality and of performance for the whole business world. Its tests included every form of trial, from measuring the tensile strength of a hair to that of a crankshaft, from a study of the most economical operation of a Ford car to investigation and (Concluded on page 102)



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## OPPORTUNITIES FOR TECHNICALLY TRAINED MEN IN THE WOOD INDUSTRIES

(Continued from page 70)

and evidently at a much lower cost than cellulose in any other form. It is conceivable that wood may eventually supplant even cotton. The dramatic history of American industrial chemistry, when chemists learned the secret of the "benzene ring" and industry learned how to apply it, may find in wood a Twentieth-Century parallel.

**T**HERE has been some progress made by federal and educational research laboratories, by a few outstanding construction corporations in the United States, and by the American Institute of Architects in problems confronting the designer and builder of wood structures. The construction industries and the architectural profession are, however, far from the desired goal in devising the most efficient and economical methods of the framing, design, and assembly of wood in light and heavy construction.

It is alleged, for example, that there is no sound engineering basis for the long-established custom of spacing in building construction joists, studs, and rafters 16" on centers, or in the lighter types 24" on centers. It is even said that the practice a century and a half ago in the New England States of cutting trees into four-foot bolts established the standard length of 48" for plaster lath. Then in using the lath in buildings it was

found necessary to space partition and side wall studs at distances which could be spanned by two or three laths without cutting the lath. A 16" or a 24" stud intervalled naturally to similar spacing between joists and rafters. The situation now confronts the structural engineer, architect, and builder as to whether this spacing is proper from the standpoint of the strength and rigidity of the resulting structure.

The engineering profession, largely through work of the U. S. Forest Products Laboratory, has known for years the exact working stresses in bending, in compression perpendicular to grain, in compression parallel to grain, and in other important structural properties for each wood used for structural purposes and for each standard quality in that wood. The engineering profession has not known, however, how much of the strength of the individual members of a bridge or building may be lost by inefficient or incorrect methods of fastening these individual members together in the structure. Here alone the structural engineer and the architect have a large field of usefulness, not only in arranging and conducting scientific laboratory tests of built-up assemblies of known strength and stiffness so far as the individual wood members are concerned, but also in the actual erection of buildings, bridges, and similar structures.

For many years the generalized statement was made that diagonal sheathing on the outside walls of buildings furnished greater strength and rigidity than sheathing horizontally applied. The building industries could not prove this statement, nor tell how (Continued on page 92)

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## OPPORTUNITIES FOR TECHNICALLY TRAINED MEN IN THE WOOD INDUSTRIES

(Continued from page 90)

much stronger the former type of construction was. The National Lumber Manufacturers Association arranged and financed a series of systematic tests at the Forest Products Laboratory to obtain authentic and tangible research data on this question. To the satisfaction of manufacturers, architects, and builders alike, these tests revealed the fact that ordinary stud and plate walls, sheathed diagonally, are four to seven times as stiff and seven to eight times as strong as horizontally sheathed. This research brought to light other timely facts on nailing, methods of wall bracing, and the important stiffening influence of even wood lath and plaster.

Much has been said, some of it justifiably, but more often in exaggeration, of the fire hazard of wood construction. There has been agitation for the so-called "fireproof" first floor, offered on the premise that 90% of the fires in dwellings originate on the inside of the dwelling and 80% of these fires start in the basement. Why, then, competitors of lumber argue, is not fire hazard in lumber construction reduced to a minimum if the basement ceiling or first story floor is made of incombustible materials? Recognizing a problem which lumber manufacturers should frankly confront, the National Lumber Manufacturers Association now has under way at the University of Illinois a series of tests on the possibilities of the laminated type of wood floor. Early results more than justify the foresight. It is found in these tests that a laminated floor made up of two by fours in light construction, or two by six and eights in heavier construction, laid on edge and tightly bolted or nailed together, will offer a floor not only of equal stiffness and solidity but also of a fire resistance equal to that of the so-called incombustible type of floors.

The preliminary research which has been inaugurated in methods of treatments to make wood fire-resistant so far confirm the prediction that lumber fire-retardant-treated in place of the present forms of masonry may be extensively used as fireproofing material around steel beams and around columns in steel construction. Beautiful building interiors will be built anywhere of fireproof lumber. Moisture-proof wood is in definite and early prospect.

As I have pointed out, 60% of the standing trees are not at present commercially utilized. It is true that the lumber industry, under that handicap, using valuable and costly materials, and confronted with the early necessity of conserving and regrowing them, cannot be expected permanently to maintain a strong position in competition with other industries more efficient in the conservation and in the use of their resources. But it is also true that the permanent status of the lumber industry will not be determined until science and industry together, and much more extensively than has heretofore been done, shall have explored the possibilities of improved utilization of wood.

The lumber industry is becoming aroused to this fact. Those who have relegated the lumber and wood-using industries to early commercial discard have, in my



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judgment, reckoned prematurely. The greatest competitor of any industry today is change. No industry is immune. No industry, because of the wide range of qualities and adaptability of its products, has a greater opportunity in the long run to meet successfully this competition of change than have the diversified wood industries.

If, as I firmly believe, it can be, the objective of which I have spoken is accomplished (and science alone can pave the way), the wood industries will have made secure a wide range of markets and uses for their products; they will have greatly enhanced the value of standing timber, our greatest and our only reproducible natural resource; they will have the only effective economic incentive to reforestation of timber lands by private enterprise; they will have insured a valuable, permanent, productive use to one-fourth of the land area of the United States; and, what is more, they will have vastly increased the opportunities for profitable commercial and professional employment.

### BENJAMIN THOMPSON: COUNT RUMFORD

(Continued from page 75)

of being important. As under-secretary of state he had been insatiably curious about gunpowder. The rural scene in England which Lord George Germaine considered suitable for week-ends was for Thompson the opportunity to experiment with cannon and with ammunition. When Sir Charles Hardy of the British navy invited him upon a cruise, it was no joy-ride but an opportunity to satisfy this same curiosity about naval ordnance and its efficiency. The experiments with gunpowder were continued upon the voyage to America with the same curiosity. They were resumed in Bavaria and there were made with an accuracy as intense as the interest in the subject.

Such a man made a great minister of war. But it was when he left the exclusively military things like gunpowder and cannon, and turned to the commonest matters of human usefulness, that his genius touched its height.

Lord Brougham poked fun at Rumford because in a serious book in print the latter gave a page and a half to the best way to eat hot Indian pudding. To Brougham these explicit directions appeared ludicrous:

"The hasty pudding being spread out equally on a plate while hot, an excavation is made in the middle of it with a spoon, into which excavation a piece of butter, as large as a nutmeg, is put, and upon it a spoonful of brown sugar, and so on; the butter, being soon heated by the heat of the pudding, mixes with the sugar and forms a sauce, which being confined in the excavation, occupies the middle of the plate! Dip each spoonful in the same before it is carried to the mouth, care being had in taking it up, to begin on the outside, and near the brim of the plate, and to approach the centre by gradual advances, in order not to demolish too soon the excavation, which forms the reservoir of the sauce!" (Continued on page 94)

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## BENJAMIN THOMPSON: COUNT RUMFORD

*(Continued from page 93)*

But any one who will follow Rumford through his studies of human comfort in small matters by the means of his application of curiosity, accuracy, and thoughtfulness to the substantial results will prefer to laugh at Brougham.

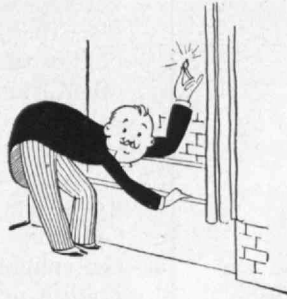
Rumford did not limit himself to hasty pudding. He considered nothing in daily life too common or too ordinary to observe or too unimportant to improve. For instance: "When dining," says he, "I had often observed that some particular dishes retained their Heat much longer than others and that apple pies remained hot a surprising length of time." Fortifying this experience by the fact that he burnt his mouth, and observing that he had done it with rice soup, he founded thereupon his essay "Of the Propagation of Heat in Fluids," winding up with the conclusion that "Heat passes with much greater difficulty or much slower in stewed apples than in pure water." Science and humanity both owe Rumford a heavy debt for reaching far earlier than most scientists the conclusion which he thus embodied in common words. If you had asked Huxley what he thought of Rumford and what he thought of Brougham, you would have had no doubt which he considered the man of genius. The truth was, as Rumford said, that he could not possibly live without constant speculation and inquiry. Whether he was asleep or awake

"the object of my speculations is so present to my mind, however busy I may be with other affairs, that everything taking place before my eyes having the slightest bearing upon it immediately excites my curiosity and attracts my attention. My relations at the court of Munich, and that, too, with a prince who was much interested in the promotion of knowledge, afforded me during a period of four years abundance of leisure to pursue almost without interruption my physical investigations."

**D**URING the period of his career which we are now beginning to describe, Count Rumford placed at the service of mankind this wonderful combination of genius and simplicity, erudition and its application to common things. And in the first instance he placed it at the service of Bavaria, the government of which was now dominated by him. It had, at any rate, none of the disadvantages of democracy. Both king and minister were thorough despots.

Being by training a military man and Minister of War at that, Thompson naturally began with the army and tried his first experiments there. Going back to fundamentals he philosophized about what an army should be in a perfect community. He concluded that it should be one which would "unite the interest of the soldier with the interest of civil society and render the military force even in time of peace subservient to the public good." He therefore sought to make his army a body skilled in the arts of peace, productive of wealth, a body of men well educated, who should permeate the entire civilized community with beneficial influence. And consequently the privates soon corresponded very closely to the field agents of the Department of Agriculture as we see them in these United States *(Continued on page 96)*





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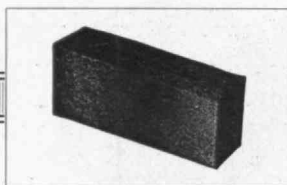
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## BENJAMIN THOMPSON: COUNT RUMFORD

(Continued from page 94)

today. For three days out of four in peace time the pri-  
vates were free for civilian work. Through them took  
place that free distribution of seed which was as sound in  
politics and agriculture in the one century as it is in the  
other. Among the seeds were cuttings of a curious tuber  
called "potatoes." At that time on the continent of Europe  
this thing was suspected and regarded with contempt,  
aversion, and fear of poison. The French law forbade  
its cultivation. Gilbert White in his "Natural History of  
Selborne" distinguishes landlords, and points out that  
the enlightened ones had been able to persuade the  
English peasant that the potato can be eaten without  
danger. How shall we measure the debt of Europe to a  
philosopher, a good advertising agent, and one from  
whose sphere of activity in Bavaria the potato went out  
as a messenger of civilization?

Then, too, a necessary part of an army like this was a  
good school; so he provided one for all the privates.  
Every soldier had a garden plot as a reward of virtues.  
Those of us who have passed through the developments  
of army life in the great World War and remember the  
enlistment of the civil population may draw a parallel  
from our personal experience.

AND before long even in peace Rumford found a  
dangerous enemy which he conquered with his  
army. In Bavaria beggars were legion. Their quantity  
and quality had become intolerable. Previous rulers had  
thoughtlessly permitted begging to become slightly  
more agreeable than working. Then greatly to their  
surprise cause produced its natural effect. Socialistic  
experiments of this sort run true to form no matter  
what the century. The people who received a sufficient  
out-of-work dole began to leave work and to become a  
true leisure class. I should say they were an intolerable  
nuisance, and Count Rumford calls them "detestable  
vermin." In Munich one could not cross the street with-  
out being threatened, and very likely assaulted by  
noisy, healthy, and insolent beggars demanding alms  
and insisting upon obedience to their demand. But they  
were living under a minister of war, in substance prime  
minister—under a shrewd Yankee philosopher who  
had the powers of despotism. And so he marshalled his  
army against them and planned his attack. The conse-  
quences were the abolition of beggary and the invention  
of the common kitchen range.

The army was naturally available. It was spread out  
over the whole of Bavaria with a distribution ideal for  
this purpose. The private soldiers were mail-carriers,  
news-gatherers, customs guards, and police. Their  
knowledge and their presence went into every hamlet in  
the land. The philosopher pondered deeply, considered  
his plans at every angle, organized his campaign, and  
then struck. At one sweep he arrested every beggar. He  
had already determined to put each one to some useful  
employment, and had made all necessary preparations.

And he was a good advertising agent. Just as President  
Hoover might open a new water-power development  
by pressing an electric button, so (Continued on page 98)

*Air view of mid-town New York taken from directly over The SHELTON*



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## BENJAMIN THOMPSON: COUNT RUMFORD

(Continued from page 96)

Rumford, the Prime Minister, commenced the arrest of beggars with all due ceremony in the presence of important and aristocrat witnesses, and gave the movement such *éclat* that every citizen was "sold to the idea" and gave his coöperation. Within days, rather than weeks, every Bavarian beggar was studying cause and effect in its simplest form. He who will not work, neither shall he eat. But the beggar was not uncomfortable or enslaved. Rumford's ingenuity and foresight had planned food, lodging, and occupation. And the plans were as wise and as fully detailed as the plans for the proper consumption of hasty pudding. There was a particular soup, the recipe for which I can supply, and it was to be followed by a particular prayer to be repeated by all beggars in barracks after the soup had been served and before they were allowed to eat. He had only to establish that it was more agreeable to work under supervision than to beg and be arrested and starved into submission. That was an easy lesson, and the beggars learned it. Moreover, Rumford again ran true to form when he taught the world his lesson with a wealth of exposition, of simplicity, and of confidence in his cause which for once brought the under-dog into sympathy with what was being done to him. This Yankee Protestant unbeliever fell ill, shortly after this period, and the entire body of ex-beggars of the Bavarian countryside went in a procession to a Catholic cathedral, where a mass was celebrated for his recovery.

And there was money, too, in this business of administering the beggars. When the experiment had been working for a year, the Elector of Bavaria was in red-ink figures. He had invested in the beggars, net above their earnings, national funds to an amount exactly stated by Rumford and calculated out as ten dollars per beggar. But when the experiment had run for five or six years all but about 1,400 beggars had been absorbed into the community, and this remainder brought in a net profit of \$30 *per annum* per beggar.

**A**NOTHER man might have rested upon his laurels. But Rumford could not do this job and devote his mind and his inventive powers to its successful accomplishment without going forward with results. The very circumstance of his greater wisdom arising out of this task drove him to do more. And here, of all unlikely places, we find the birth of the kitchen range. Who would suppose that it was invented by a prime minister of Bavaria strictly in the line of his duty of disciplining beggars? But beggars must eat, food must be cooked for them, fuel must be used in the preparation of this food, and there is a subject which Rumford was capable of handling with erudite and practical consideration. He went to the bottom of the pot and below that to the fire itself, using his philosophic mind everywhere. Beginning with the soup, he found that he could feed a thousand beggars on soup at a cost for fuel per beggar per day amounting to 1/111th part of a penny. The raw materials for his soup were barley, peas, potato, and bread. But owing to the prejudice against potatoes in Bavaria

and the difficulty in getting them accepted for food, this material cost 422 twelve-hundredth parts of a penny per dinner until Rumford "put over" the potato on Bavaria. Then the cost fell to 410 sixteen-hundredths of a penny. Later, when he had come to live in London, Rumford wrote an essay upon this subject. The costs in London were a bit higher. The final cost there for a single poor man's dinner was 2,951 twelve-thousandth parts of a farthing. But by the time that Rumford had reached London this was not a matter of beggars and poor-houses, of Mr. Bumble and that sort of thing. It was an invention which was affecting civilization itself. Dearth and famine came after the Napoleonic period, but that famine was very largely ameliorated by Rumford's genius. Lord Hawksbury in the House of Lords laid it down that one-third more nourishment could be got out of food by Rumford's methods, that is, over and above the best result previously obtained. So one man's brains and genius and common sense had made it possible for three people to produce the food which previously had required the labor of four, and thus set one food producer free to produce wealth and comforts. All over the world these tremendous results were freely acknowledged and used. But Rumford in Bavaria did not stop even at this point. He had begun with an efficient army. He had applied that army and his genius to the abolition of beggary. He had gone on to turn the burden of the beggars into a profit to the nation. He had won that profit probably through the use of soup. Better still, he had produced a soup that *Oliver Twist* would have enjoyed, and at any rate something which made beggars grateful to him. These steps being accomplished upon a scale of world-wide importance, he carried his victory forward and reformed our domestic cooking. We know the difficulty of introducing any innovation when the new thing has to be used by every housekeeper. It would be idle to pretend that perfection in the use of fuel is even now in sight, but the difference between the way fuel was used when Rumford began and the economies of fuel after his work had taken effect is a difference brought about with a swiftness not known either before or since in domestic economy.

**H**OW did he go about it? First, he observed that when soup was cooked according to the ordinary Bavarian style, it took a certain number of cubic inches of fuel which he standardized and measured. Likewise, it took a certain number of minutes to prepare and cook the soup over the open fire made with that fuel. It was not new to think of confining heat and directing it entirely against the thing to be heated, but it was certainly new that a prime minister should attempt to persuade substantially all thoughtful cooks to use the idea. Rumford came at once to the enclosed fire and brought the world after him. And he did this because he thought profoundly and carefully about the process of heat, and simply and sensibly about its use by cooks. Professor Youmans, looking back over the history of science, tells us that Rumford was the first man who took the question of the nature of heat out of the domain of idle speculation, such as it had been in since the days of Aristotle, and dealt with it upon the true basis of actual physical experiment.

The obituary memoir of Rumford in the "Gentleman's Magazine" calls attention to the philosophizing which Rumford did. "He repeatedly declared to me," so the author says, "that it was his decided opinion that heat and light were the results of vibrations in bodies and were not bodies themselves." At the time when Rumford made this assertion he was as far ahead of the rest of the world as if he had invented wireless or the telephone. But it was not enough to be ahead of the rest of the world; it was necessary to be in touch with every kitchen and to be familiar with every chimney and to have a serious and sensible power of convincing cooks. All that he contributed to this improvement.

We find it fully described in an "account of the Kitchen fitted up at the Foundling Hospital [in London] under the direction of His Excellency Count Rumford." This kitchen contained a roasting machine which would roast 112 pounds of beef using a peck of coals supplemented by a peck of cinders from the previous day. The previous use of coal had been of ten times that quantity. There were two pipes which forced hot air over the meat so as to control the browning. Then there was a steam-box for boiling meats, greens, and potatoes. And in a cook's shop, on land of the Foundling Hospital in the colonnade north of Upper Guilford Street, there was a place where you could buy tickets for the soup kitchen. Such were the Rumford cooking devices when they appeared in London. We know also what their arrival in New England was like. The learned Mr. Chief Justice Parsons, reading in his foreign books and observing some imitations of Rumford or importations of parts of his apparatus, became convinced of the "success of Count Rumford's apparatus for cooking, imported a complete set . . . and very proud he was of this apparatus." So his son records in the excellent biography, which goes on:

"The difficulties springing from the novelty of it and the ignorance of our cook he overcame by the most patient instruction, until at last everything went well. Thereupon we had a large dinner party for which the new cooking apparatus proved entirely adequate. . . ."

But no matter how great the comfort which was created by the domestic device, we should never think of it as a single and isolated invention. It was one of the many results of Rumford's sound philosophizing about the nature and application of heat. He studied ordinary fireplaces and chimneys and wrote an essay about them. Any client of any architect can today insist upon having Rumford's directions followed. The architect will probably have a copy of the "Chimney Fireplace" essay, and if he will obey its directions no chimney need smoke. No automobile would work today were it not for progress in the study of heat made by Rumford and gratefully recognized by scientists. Huxley pays his tribute to Rumford on this particular point, using the Count as the proper type of the helpful inventor. "What simpler and more practical," says Huxley, "than the attempt to keep the axle of a wheel from heating when the wheel turns around very fast? How useful for carters and gig drivers to know something about this! and how good it were if any ingenious person (*Concluded on page 100*)

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## BENJAMIN THOMPSON: COUNT RUMFORD

*(Concluded from page 99)*

would find out the cause of such phenomena and thence educe a general remedy for them. Such an ingenious person was Count Rumford."

SOMETIME I hope a really good biographer will describe the whole of Rumford's career, including his happy and useful later life. He lived and flourished in London, where he founded the Royal Institution. Later he lived in Paris and pursued his scientific researches there. He never went back to America, but he always kept a patriotic feeling for his country and was the founder of the American Academy of Arts and Sciences and of the Rumford professorship in Harvard University. In his later life there was naturally some eccentricity. His house in Brompton near London, for instance, had double windows constructed in imitation of those which he had seen in Germany, Sweden, and Russia.

Before long, however, Rumford decided that he preferred Paris, and there he spent the later years of his life. He married, and then had lively quarrels with, the widow of Lavoisier, the famous chemist. One scarcely wonders that he retired from association with that particular lady to a comfortable home in the suburbs of Paris, where his associations were less reputable, but freer from quarrels.

Another great scientist, Cuvier, passes a post-mortem verdict upon all this with the skill with which the Frenchman applies the scalpel of words. It is what the French call an *éloge*, but —

"He was no democrat. His services to his fellow men were rendered them without loving them or even thinking well of them. He felt that the common people should not be trusted with the care of their own well being. He loved slavery as if he were the owner of a plantation and China seemed to him to have a nearly perfect government because its common people were absolutely in the power of its men of education."

Cuvier then goes on to tell us that, regardless of all consequences, Rumford's behavior throughout life was "modeled upon his passion for order." "Doubtless," reflects Cuvier, "this was a good way to be effective, but it certainly was not the way to be agreeable in the society of his equals." And the biographer of his wife neatly remarks that she "had to be gracious for both." Thus Rumford threw away all those opportunities for great popularity which his service to mankind had opened for him. One really ill-natured biography, such as only an ill-natured and laborious scientific rival could produce through painful effort, asserts that Rumford's fame "induced him to display without reserve those dispositions which he had hitherto been at some pains to conceal," and that the result was arrogance. There was some quarrel, very likely with this writer and arising out of some one's arrogance, which led Rumford to abandon the Royal Institute, the favorite child of his scientific life, and to desert London for Paris. And now he has nearly disappeared from history.

I think it is largely because he always had a kick ready for the under-dog.





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## WINGED WORDS

(Concluded from page 67)

*it up*, which displaced *stride out churl*. To take off for somewhere is common, as is to *get off the ground*, the latter in the place of *to make the grade*. *Crack up*, *flat spin*, and *down wind* have each a general value and a limited but growing following, and scores of the straight nomenclature words have been broadcast by the newspapers for a decade. Sometimes the public have made a use all their own of an aeronautical term. I have several times heard the expression *air-cooled teeth* for what were formerly called *buck teeth*, and must claim it as a result of the popularization of the air-cooled, radial engine by our later-day flying heroes.

As growing as its effect on popular speech is the context of the jargon itself. New words are continually needed to describe more accurately the latest developments. Take the autogiro as an example. There is no word which describes satisfactorily its nearly vertical descent into a small field; certainly the usual airplane word *glide* does not convey it. Why not turn to that great source-book for mathematicians and astronomers, "Through the Looking-Glass"? There we find:

"T was brillig and the slithy toves  
Did gyre and gimble in the wabe."

Now *gyre* would be good for the act of flying an autogiro, so why not *gimble* for the vertical descent? *Brillig* describes the kind of weather and *wabe* the kind of territory tough for airplanes, but all right for autogiros. And *slithy toves*? Why, they are the sort of people who would go flying in one, of course, you numskull.

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## THE DEATH OF CHAIRMAN STRATTON

(Concluded from page 88)

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# ADVERSARIA



## Retired

¶ ELLEN A. KING, librarian of the student and faculty libraries in Walker Memorial. Since 1890 Mrs. King has been a friend and adviser to thousands of Technology men and she will be greatly missed. In the supplement to the July, 1931, issue there is a very interesting article by Mrs. King on her memories of the '90's in Rogers Building.

## Honored

¶ LOIS L. HOWE '90, by being chosen a Fellow of the American Institute of Architects. So far as known, Miss Howe is the first woman to receive this recognition. After two years' study of architecture at Technology, she spent a year in Europe. Upon her return to this country, she opened her own office in Boston and became very busy remodeling and building houses. Her book on the details of Colonial houses is accepted as standard. In 1913 she designed a Cape Cod house which took a prize.

¶ MARY O. SOROKA '26, by being the first woman to receive a certificate of civil engineer from the authorities of New York State.

## Elected

¶ PIERRE S. DU PONT '90, to a membership on the committee of 18, to direct the nation-wide drive for relief. Owen D. Young is chairman of this committee.

¶ CHARLES W. SHERMAN '90, to an honorary membership of the New England Waterworks Association, at its 50th Annual Convention on September 29.

¶ ROBERT S. WESTON '94, to the Second Vice-Presidency of the American Public Health Association, at the convention which met in Montreal in the latter part of September.

¶ BRADLEY STOUTHON '96, to the Presidency of the American Electrochemical Society for the year 1931-32.

¶ HOMER N. CALVER '14, to the Governing Council of the American Public Health Association.

¶ JAMES A. TOBEY '15, to the Presidency of Delta Omega, the honorary public health society.

¶ ROBERT B. LINDSAY '24, to a fellowship in the American Academy of Arts and Sciences.

## Discovered

¶ By JULIAN W. HILL '28 and Wallace H. Carothers, a process for making Castor Oil Silk. By heating castor oil and an alkali and mixing the result with the motor anti-freeze compound called ethylene glycol, these two du Pont chemists produced an artificial silk fiber. It is an

entirely synthetic fiber, but is as lustrous, strong, and elastic as real silk. It is too expensive to manufacture commercially, but it is a good demonstration of chemical knowledge and skill.

## In the News

¶ EARL L. OVINGTON '04, for flying on a coast-to-coast air mail trip on September 23, the 20th anniversary of the first air mail flight. Mr. Ovington piloted this first flight — which was a short one — from a landing field on Nassau Boulevard to Mineola, Long Island. The commemorative flight, on the regular mail schedule, left Los Angeles at 6:15 a.m. on the anniversary day and followed the southern route to Atlanta, thence to New York. Mr. Ovington flew as far as Tucson, Ariz.

## Presented

¶ By SAMUEL C. PRESCOTT '94, SHELDON L. HOWARD '97, HENRY M. LOOMIS '97, CHARLES E. A. WINSLOW '98, EARLE B. PHELPS '99, LANGDON PEARSE '01, PAUL HANSEN '02, CHARLES A. HOLMQUIST '06, JOHN F. NORTON '06, WILLIAM F. WELLS '09, HENRY W. VAN HOVENBERG '11, HARRY F. FERGUSON '12, DONALD B. ARMSTRONG '13, GAUUS E. HARMON '13, HOMER N. CALVER '14, LAURENCE P. GEER '15, RALPH W. MENDELSON '15, STANLEY H. OSBORN '15, ELLIS S. TISDALE '15, JAMES A. TOBEY '15, JOEL I. CONNOLLY '16, HAROLD H. MITCHELL '16, ARTHUR W. HEDRICH '17, CLAIR E. TURNER '17, MILLARD KNOWLTON '18, WILLIAM W. PETER '18, NELSON M. FULLER '23, ELIZABETH C. NICKERSON '23, PHILIP K. BATES '24, ROBERT S. HARRIS '28, JOSEPH E. LANGEVIN '30, DAVID S. STANLEY '30, C. C. YOUNG, a one-time special student at the Institute, and JOHN W. M. BUNKER, Professor at Technology, papers at the annual meeting of the American Public Health Association, Montreal, on September 14-17.

¶ By J. RHYNE KILLIAN, Jr., '26, a paper on "Typography and Magazine Layout," before the New England District meeting of the American Alumni Council in Hanover, N. H., on September 12.

## Written

¶ By ALICE CURTIS DESMOND, wife of THOMAS C. DESMOND '09, a book entitled "Far Horizons" published by Robert M. McBride and Company. This is a very charmingly written book on travels to many foreign lands that she and Mr. Desmond have visited. Mr. Desmond is now a New York senator representing the 27th District, and a member of the New York Legislative Power Commission.

## Deaths

¶ The following deaths have been reported to The Review office during the past year:

¶ DANIEL C. FRENCH '71, on October 7, at his home in Stockbridge, Mass. Mr. French, known as the dean of American sculptors, became famous when he executed the statue of "The Minute Man," which stands on the historic Concord bridge. Other well known works by Mr. French in Boston include the Wendell Phillips statue and the George Robert White Memorial in the Public Garden; the Francis Parkman Memorial at Olmstead Park, Jamaica Plain; and the John Boyle O'Reilly statue in the Back Bay. The John Harvard statue at Cambridge was also a work of his.

In 1891 Mr. French received a Paris salon medal for his large relief "The Angel of Death Staying the Hand of the Sculptor," and in 1910 he was made a chevalier of the Legion of Honor. In 1920 he was further honored by France by election as an associate member of the fine arts class of the French Academy. He was also an academicien of merit of the Royal Academy of St. Luke at Rome.

In a message of condolence to Mrs. French, President Hoover said: "... He was recognized not only in this country but throughout the world as an artist of preëminent skill and power. He wrought in marble imperishable incidents and personages of American history. His statue of Abraham Lincoln in the Lincoln Memorial in the national capital will be a national shrine forever. ..."

¶ HERMAN H. DUKER '82, on September 3, 1930.

¶ ROBERT W. GILBERT '82, on July 29, 1927, at Majors Island, P. O. Mangerville, N. B.

¶ JOHN G. HOWARD '86, on July 18. Mr. Howard had been the head of the Department of Architecture in the University of California for a number of years.

¶ FREDERIC NICKERSON '04, on July 13, in Santa Barbara.

¶ JAMES L. ACKERSON '06, on September 13, in Chevy Chase. Since receiving his degree, Mr. Ackerson has spent most of his time with the Navy.

¶ WALTER J. E. BARCUS '08, on September 11, in Detroit.

¶ JOSEPH T. TOWER, Jr., '23, on August 23, as the result of a drowning accident in the Rio Grande River, Texas.

¶ CHARLES H. WENZ '23, on May 22, at Saranac Lake.

¶ PAUL M. BOYD '26, on September 8, in an airplane crash at Buffalo.

¶ THOMAS R. HUGHES '26, on August 2, in St. Joseph, Mo.

¶ ROBERT J. MERCER '28, on August 3, in New York City.

¶ RALPH G. OFFERKUCK '31, August 28.

# NEWS FROM THE CLASSES AND CLUBS

1880

With the exception of two days, the Secretary spent the summer at his cottage in Stow, Mass., overlooking Lake Boone on one side, and the Assabet River on the other. With him for all, or a part of the summer, were his wife, his son and daughter and their families. The son, Donald, is a graduate of Harvard and a special at Technology. He is located at Houston, Texas, where he had an office as a consultant geologist and geophysicist. He has one daughter.

The daughter, Helen, is the wife of Harold F. Eastman, a graduate of Harvard and a special at Technology. He is an electrical and gas engineer and has been with Stone and Webster since his return from the World War. They have two daughters. Their home is in Needham. My son, his wife, Mrs. Barton and I made a two days' automobile trip to Chester and Royalton, Vt., spent the night at Littleton, N. H., came down through and back up through the Crawford Notch, then down through the Fraconia Notch and home via Concord, N. H.

The Secretary has just begun his 52d year of teaching and enjoys it as much as ever. His Sundays, when pleasant, are employed in walking through the country within 25 miles of Boston, taking the woody roads of which there are many, which are not frequented by automobiles. — GEORGE H. BARTON, *Secretary*, 89 Trowbridge Street, Cambridge, Mass.

1882

On the evening of Wednesday, May 6, as arranged through the kind efforts of Dr. French, the class met at the University Club for its Forty-Ninth Annual Reunion. Those present were: Miss Ames, Messrs. Cheney, French, Gooding, Lewis, Ross, Walker, and Darrow. "I sooth, a goodly companye." Following an excellent dinner letters of regret from absent members were read, and mention was made of those who have passed on during the year since our last meeting; George E. Warren died September 1, 1930; Herman H. Duker, September 3, 1930; Joseph H. Walker, November 5, 1930; and John H. Ross, March 12, 1931.

There was an informal discussion of the approaching Fiftieth Anniversary, and, while no definite program was presented, it seemed to be the thought of those present that an all-day outing about the first week in June, 1932, should be held at some place easy motoring distance from Boston. A gratifying feature of this reunion was the election of Walter Snow's daughter, Rachel, as an honorary member of her father's class and its assistant secretary. Our adopted niece has written a graceful acceptance of her appointments and adds the hope that she may be helpful to the Class.

Miss Ames had collected some interesting statistics about a number of American Colleges which she read. One item gave the cost of one year's tuition at Technology as \$500, and the actual cost to the Institute per pupil for last year as \$904. This figure varies from year to year with the attendance.

Members of the Class who attended the Annual Reunion in June, 1928 at the Mayflower Inn, Manomet Point, will remember the pleasure we all felt in having Duker with us again after a long absence from class gatherings. Time had made little change in him. His fine athletic figure and strong carriage were much the same as in his student days, and he seemed in excellent health and spirits, with the prospect of many years ahead of him. It was a sad shock therefore, when news of his death was received. He entered Technology with the Class of '82, taking the special course in architecture for two years.

From a letter written by Mrs. Duker the following extracts are taken: "Mr. Duker passed away on September 3, 1930, as he was entering our new home which he had built with so much care, thoughtful attention, and pleasure. . . . A few years after returning from Boston he was taken into the firm of Otto Duker and Company, his father's lumber and mill work business. After the death of his father, he became senior member of the firm. His activities in business added much to the growth of our city as he supplied material for many of Baltimore's prominent buildings.

"He was a director in the National Bank of Baltimore and the Century Trust Company. Mr. Duker took much interest in all charitable and civic work, but was most active in the Young Men's Christian Association and the Federated Charities. He was a member of the Merchants' Club, the Maryland Country Club, and the Baltimore Country Club, and took a great deal of interest in athletics. He was a member and trustee of the First Methodist Episcopal Church. He had pleasant memories of Boston and his college associates there, and frequently spoke of them with much pleasure."

Joseph H. Walker died at his home in Hollywood, Calif., November 5, 1930. He was a member of the Class of '82, taking the regular course for the first year only. Information as to his activities since leaving Technology is somewhat meager. At one time he was located at Fairport, Kansas, where he was interested in the breeding and handling of live stock. About 30 years ago he moved to California and engaged in horticulture. Some years ago he had a nervous breakdown and retired from active work. — ALFRED L. DARROW, *Secretary*, 13 Garrison Road, Brookline, Mass. RACHEL P. SNOW, *Assistant Secretary*, Box 625, Falmouth, Mass.

1884

All of us in the chemical courses remember the genial, companionable Mead who took mining, as did many others, not because he ever intended to follow it, but because it was one of the broadest and most interesting courses. I take the following from the Boston *Transcript* of June 26, 1931: "Frederick Stearns Mead, who died this morning in Waverley at the age of 68, was born in West Acton on February 1, 1869. He attended Chauncy Hall in Boston and entered Technology in the Class of 1884. After two years, he left to enter the business of A. and O. W. Mead and Company, wholesale produce dealers, conducted by his father and uncles. He became a partner in 1900 and continued until ill health compelled his retirement, in 1921. During his active business life he was a member of the Boston Fruit and Produce Exchange and at one time was President of that body.

"On September 18, 1884, Mr. Mead was married to Lizzie M. Gates of West Acton. They established their home in Arlington, where Mr. Mead served on the board of selectmen for years and was chairman for two years. He also held various offices in the Universalist Church of Arlington and for several years was clerk of the parish.

Dr. and Mrs. Tyler, after spending a few days at their camp on Lake Winnetoesaukee, finished their vacation in Europe. — AUGUSTUS H. GILL, *Secretary*, Room 4-053, M. I. T., Cambridge, Mass.

1886

The June, 1931, number of the *Medical Woman's Journal* contains an interesting and informative paper on the value and need of education in lip reading for the hard of hearing from the pen of Dr. Alice G. Bryant. When it is realized that there are approximately 3,000,000 hard of hearing pupils in the public schools of this country, to many of which there are at present no adequate opportunities available for overcoming this handicap to their education, the need of public enlightenment and awakening on the methods advocated by Dr. Bryant is apparent.

Since the last issue of *The Review*, death has taken two shining lights from the Class, Arthur C. Anthony and John G. Howard. Anthony had been for many years a member of the brokerage firm of Townsend, Anthony and Tyson of Boston, of which firm he was the Boston Stock Exchange member.

Howard has been for a number of years at the Head of the Department of Architecture in the University of California in Berkeley. He leaves a widow, Mrs. Mary R. Howard, and four sons. — ARTHUR G. ROBBINS, *Secretary*, Room 1-270, M. I. T., Cambridge, Mass.



1888

Commodore Walter Keith Shaw experienced his most successful yachting season this year. His "M" class sloop *Andiamo* won seven firsts of 16 starts. At your Secretary's request he has summarized his series of spectacular races in the following concise account: "In the New York Club cruise, *Andiamo* won first in her class in all the four squadron runs and was the best sloop in the whole fleet on corrected time on two of these runs. — *Andiamo's* greatest victory was in the race from Provincetown to Marblehead when she finished over an hour ahead of the nearest boat, including the cup defenders as well as her own class, making the best corrected time of any sloop.

"Her most spectacular victory was in the race from Newport to Vineyard Haven. Each of four of the five 'M' boats held the lead at one time. (First the *Valiant*, then the *Prestige* was 14 minutes ahead at the Hens and Chicken Lightship, then the *Avatar* had a lead of a mile and a quarter at the head of the Middle Ground shoal buoy.) *Andiamo* won by turning sharply in around this buoy and going down inside the Middle Ground to come out at the lower end a winner by one minute and nine seconds over *Avatar*. — *Andiamo* won the next race from Vineyard Haven to Provincetown (73 miles) by 53 seconds through heavy fog around Cape Cod over the shoals, finishing at 11:30 p.m. in heavy darkness.

"*Andiamo* won the last race through Buzzards Bay to Newport by over half an hour and made the best corrected time of any sloop but it was a heart-breaker, owing to three changes of wind. On the last change from southwest to westwind, I found we were in the vortex between these winds and had a slight wind astern. Suddenly, two of my sailors spied a fisherman's trawl flag only about a length away blowing briskly in the new west wind. I headed *Andiamo* across the edge of the vortex and she just barely reached the new wind before she lost all headway. It took ten minutes for *Andiamo* to cross between these two winds but it took *Valiant*, who had meanwhile come up with a southwest wind and gone slightly ahead of us, 40 minutes to cross from one wind to the other, so we won easily by about that time. — *Andiamo* also won in her class in the Puritan Cup race. She won these various races because she had '*Andiamo* weather,' that is, light to medium winds, and we made the most of it. As soon as the weather turned strong easterly, as it did for the Astor Cup and King's Cup races, *Andiamo* had no chance."

"Smoky Joe" Wood, hero of the '88 vs. '13 baseball game at Wianno during our Twenty-Fifth Class Reunion in June, 1913, tells why he gave up golf and is devoting his vacations to travel in the following interesting statement: "Having concluded that I can never become a golfer with only two weeks play a year, I abandoned the pastime and devoted my 1931 vacation to travel in new fields. With Mrs. Wood I sailed from New York

late in July, with Christobal for our first port of call. We were doubly fortunate in our dates for during the two weeks in which we formed our plans the cost of the trip was reduced about \$30 and when we got under way the weather was superb. Hardly a ripple did we feel after passing Hatteras and only slight disturbance off that dreaded point.

"Once clear of New York harbor our course was nearly due south to pass between Cuba and Porto Rico — a new item in my knowledge of geography — and thence across the Caribbean to our destination. Enough has been written of the great canal so of that little more. We crossed the Isthmus by airplane to get a different slant and were well repaid by the comprehensive view of the Canal, showing clearly and at a glance where the heavy work was necessary and how it was done. Extending to the horizon on each side was the great impounded lake of Gatun — a revelation as to its enormous size which the extensive literature had not given me. From the waters of the Atlantic to those of the Pacific we passed in 22 minutes and then followed two delightful days in Panama.

"Our return was made through the Canal, that part of the trip occupying nearly all day and giving a thrill for every minute. Of that again enough has been written, but I found a new interest in the handling of the big vessels. Before clearing for the passage a canal pilot comes on board and supersedes the regular captain, retaining command until the boat again enters the broad seas. With him comes a crew of 'canal seamen' to operate the vessel. Four 'electric mules' or six for larger vessels, furnish motive power for passing through the locks. Our boat, the *Santa Maria*, required six of those mules, four towing and two holding back, and the total crew of government men was 18 men and the pilot. The discipline was admirable — not a bit of the old-time shouting and bawling of orders which I had always associated with large marine operations. Just a raise of the pilot's hand and the order was given and at once obeyed. Only when clearing the last gate was a sound heard and then a short blast of the whistle signified that all was ready to go ahead. Dinner was served on the deck that we should miss nothing and the variety of tropical growth added zest to the meal.

"Shortly before our trip a big British battleship had passed through, having only a foot on each side to clear the lock walls, and I derived quite a kick over its captain stepping down for our Yankee pilot. — An afternoon and evening in Havana gave us an opportunity to have a sight-seeing ride and a glimpse of the business part of the city. — Altogether we were gone 16 days and the 14 on the water gave a wonderful rest and relaxation, but alas for my bank account, have only whetted our appetite for more."

Fred Nichols, our touring classmate, is now in Montana looking over its copper mines, after motoring through Yellowstone National Park, following his trip from West Texas to Southern California

and thence up to Oregon and Washington, where he made a short stay at Paradise Inn, Rainier National Park. We expect to see Fred in Boston sometime before the snow flies.

The following article appeared in the New York *Times* recently and as your Secretary can vouch for its truthfulness he thinks all our classmates should know the story. "Reminiscing on the early days of Stone & Webster, Charles A. Stone, chairman of the corporation which has succeeded the partnership which he started with Edwin S. Webster 42 years ago on their graduation from Technology, said that they began business in two small rooms on the top floor of 4 Post Office Square, directly opposite the Boston Post Office. The building was one of the finest in Boston in those days, five stories high, with marble stairs leading up from the street. 'It required only the two of us to run the business, with the assistance of an office boy by the name of Jimmie Cartwright, who was something of an athlete,' Mr. Stone recalled. Due to the business depression, the young partners were bothered by peddlers, beggars, and book agents, so that a notice was posted on the ground floor to the effect that no peddlers, beggars, or book agents would be allowed in the building. One stout old fellow, with a basket of shoe laces and pencils, laboriously climbed the five flights of stairs one day, Mr. Stone recounts. 'An argument ensued, and Jimmie promptly kicked the man down the first flight of stairs. A man on the floor below heard him coming and promptly kicked him down the next flight, and a man below did the same. Finally, when the peddler had bumped down the entire five flights and found himself in Post Office Square, he gathered himself together and looked up at the building, rubbed himself to relieve the pain and said: 'Good Lord, what a system!'" — BERTRAND R. T. COLLINS, Secretary, 18 Athelstane Road, Newton Center, Mass.

1890

A very interesting article appeared this summer in the press relative to our classmate, Miss Lois Lilly Howe, of Boston. At the recent San Antonio Convention of the American Institute of Architects, she was presented with a beautiful bouquet of flowers by the ladies, and also received the graven announcement that she had been chosen a fellow of the American Institute with seven other Boston architects, of which she was the only woman. Miss Howe has always been interested in architecture, and spent two years with us at Technology. Her book on the details of old Colonial houses is accepted as a standard. After graduating from Technology, she spent a year in Europe, and then opened her Boston office. In 1913 she received a prize for designing a Cape Cod house. Her partner is Miss Eleanor Manning '06.

We note among the 52 members of the Harvard faculty who signed the protest against the dismissal of Herbert A. Miller, Professor of Sociology at the Ohio State University, because of his

1890 Continued

views on race relations and Indian civil disobedience, the name of Professor William Z. Ripley. It is claimed by signers that it has excited grave concern among friends of higher education the country over.

Professor Ripley, in a three-column article that appeared in July, says that freight rates must go up; that there is no other way to meet the critical relations and something should be done at once. — In May, Dr. Willis R. Whitney was the speaker at the luncheon of the Boston Chamber of Commerce, at which he told them of amazing new scientific discoveries. Dr. Stratton was also present and sat at the head table. — Dr. and Mrs. Franklin W. White with their son and daughter sailed from Boston for Europe in June on the *Laconia*.

Harry and Mrs. Goodwin with their son, spent several weeks this summer at the J. Y. Ranch in Wisconsin, and a card received from them said there had been absolutely no rain in that section for weeks. He planned also to stop in Santa Barbara where he will visit with Mr. and Mrs. George E. Hale, who have taken a house there for the summer. — Among 28 names of scientists, "America's Foremost," inscribed on stone tablets above the entrance to Buhl Hall of Science at the Pennsylvania College for Women, are six from Technology: Dr. Compton; Dr. Edmund B. Wilson, formerly of the Faculty; Dr. Arthur A. Noyes '86; Dr. Gilbert N. Lewis, formerly of the Faculty; and two of our classmates, Dr. George E. Hale, a distinguished astronomer, and Dr. Willis R. Whitney, Director of Research for the General Electric Company.

Calvin W. Rice, Secretary of the Society of Mechanical Engineers, received an honorary award at the 75th anniversary meeting of the *Verein Deutscher Ingenieure* — a silver plaque suitably engraved. There were 2,000 present at the time of the award. The medal was given in grateful appreciation of his services to technical scientific achievement, particularly in promoting the mutual international interests of the engineers of the entire world.

In a press notice, Dr. George E. Hale tells how a reporter for a sensational newspaper came to him just after he had made one of his important discoveries at Mt. Wilson Observatory, and called it "hot stuff." "So you've found a way to get helium from the sun?" "That's ridiculous," replied Dr. Hale. "There are vast quantities of helium in the sun, but of course there's no way to get it." But the reporter had his mind set on the "hot stuff" for a story for his newspaper. "Imagine poor, defenseless Einstein when those 'hot stuff' fellows surround him," said Dr. Hale. "All he wants is a chance to study in quiet." Evidently the same applies to George, also.

We note by the press that Pierre du Pont has taken up baseball again. The report says he played first base and knocked out a two-bagger. If we have a game at our Forty-Fifth Reunion in 1935, we shall count on Pierre to lead

one of our nines. Hope meanwhile he will keep in training. — Owen D. Young has been made chairman of the committee of 18 to direct the nation-wide drive for relief; and among those on the committee is Pierre S. du Pont. It is reported that Pierre carries a seven million life insurance. We trust it will be many years before the insurance company has to come across. — During the months of June and July, George A. Packard made an examination of mines near Oaxaca, Mexico. We trust that George has pulled through safely and escaped any stray bullets.

Darragh deLancey for many years now has been very much interested in sculpturing and designing. For six years he has had a studio in New York near Carnegie Hall, as he says one must be in a large city to secure certain material and facilities. He has done a good deal of work and has exhibited at both the National Academy and the Architectural Exhibition. His most recent work, completed about the middle of July, is a heroic figure of "Peace" for the War Memorial at Newtown, Conn., which will probably be unveiled next Armistice Day. The figure is being cut in granite; and he has favored your Secretary with a photograph taken from the model. It certainly is a dignified and monumental figure, a female type, strong, yet not unlovely. The drapery is treated in the Greek manner, and the symbolism tells its own story. Darragh and Mrs. deLancey may run over to the French Colonial Exposition which is attracting crowds to Paris. — GEORGE L. GILMORE, Secretary, 57 Hancock Street, Lexington, Mass.

## 1892

Our class dinner was held at the University Club, Boston, on the evening of June 8, and Carlson, Shepherd, Heywood, Nutter, Dean, Tidd, Pettee, Worthington, Fairfield, Hutchinson, Sweetser, Slade, Locke, Church, Johnston, Norcross, Fuller, and Hall were there. After the dinner it was voted that the following committee should arrange for the Fortieth Anniversary celebration; viz., Hutchinson, Carlson, Nutter, Fairfield, and Hall.

In order that the messages that were sent and read at the dinner may be enjoyed by the larger group reached by these notes, I will give some of them. Here is a telegram, intact, that Schlacks sent: "Your announcement class dinner stop was out of town but hasten to contribute the following stop architects dinner Chicago Professor C. Howard Walker honor guest stop after his speech Mrs. Schlacks insisted I speak to him he couldn't remember my face but upon hearing my name exclaimed remember you of course I remember you and you are running true to form for no matter what the monthly project be it depot city hall or what yours always resembled a church stop considering that I developed into an ecclesiologist and considering the thousands of students and the 40 years intervening I am warranted in extolling his memory."

And this from Du Bois: "Six years ago I retired from active service in the Navy and took my family to Europe, putting the children in schools in Switzerland and France and traveling considerably with my wife. After two and a half years over there I returned to this country and have since made my headquarters here (Washington, D. C.) in fall, spring, and winter, and in Marblehead in summer. Last year I took a very enjoyable trip as supercargo, with no work, through the Panama Canal to San Pedro. Next year, if conditions do not become much worse, I hope to go to Europe again to remain a year or so. That is the place to get your money's worth and to escape the restrictions under which our ruling class tries to make us exist."

And now for William Palmer Gray: "... I remember you with much pleasure. You made me Class Marshal at the finals of '92 and I had to call on that great saint and scholar, Rev. Phillips Brooks, to ask him to preach the Baccalaureate sermon. It happened that my father was Treasurer of the Episcopal Diocese of Virginia at that time, and paid the Bishops their salaries. Bishop Randolph of Virginia gave me a letter of introduction to the Rev. Phillips Brooks of Boston, which I never presented, although I attended his church. When I asked him to preach our sermon I told him of this letter. He said: 'Boy, you have done me a great injustice. I should have liked to have known you, and have had you to dinner at my house. I will gladly preach your Baccalaureate sermon and the next time you see Randolph give him my best regards.' I had to call for that great scholar and gentlemen, President Francis Walker and his wife and take them to the final ball which I had arranged for at the Vendome Hotel. The management gave us a fine supper, the music was good, and the hall beautifully decorated. All went off without a hitch as far as I knew. Our Class Seer said that I would one day be minister to France. So that taking everything into consideration, I must say that when I think of you all, it is with the happiest of memories, and something pulls tighter at the strings of my heart."

Rowell wrote: "I am still with Day and Zimmerman, Inc., and have been with them since October, 1916. Our work is mainly reports on utilities and industrials. I see Manly and Newkirk at the local Engineers Club (Philadelphia) and also at meetings of the local Technology Club. I also see Elisha Lee occasionally. I saw Ober about a year ago in Providence and then spent the night at his home in Newport. I do not believe I have seen any other '92 men for a number of years. I have three sons and a daughter. The oldest boy is a graduate of Oberlin College. The second boy graduated from Haverford College a year ago. The third boy is just completing his sophomore year at the Institute, where he is taking Tucker's course. The daughter is just completing her freshman year at Oberlin. With best wishes to all." Our thanks for your best wishes, Rowell.



1892 Continued

Then there was a long and reminiscent letter from Lyon. Describing at first the noise and push and confusion of opening day in the corridor of Rogers, and the contrast as he got a glimpse of President Walker at his desk in his office, oblivious of the confusion just outside his door. I am sorry that I do not dare to give this letter in full for it evidently was written with much thought and care, but I fear the editors of *The Review* who recently cautioned us about being prolix.

Hartley Dennet sent one of his characteristic cards which ends thus: "The Western world has been driving for what it wanted to get but got the undesirable things that went with the desirable, as the Irishman who took Paris Green to kill the potato bug he had swallowed." — Then there were other cards, some with just "can't come but good wishes," as sent by Chase, Cogswell, Chute, Forbush, Ingraham, Koch, Lane, Manley, Mac or otherwise McCaw, Messenger, Parrish, Pierce, Ruggles, Dwight Robinson, Sargent, Stone, and Walker. — The following message was added in Edward C. Wells' card: "Sorry, it is not possible to be with you on June 8. My best wishes to all the boys. There is little to tell except that I have eight grandchildren, a fact which may well confirm Hall's statement that next year comes the Fortieth Reunion. However, I still retain a figure similar to those depicted in the lower left hand corner of Hall's notice."

Ober adds: "Have recently moved from Newport to Providence, where it would be my pleasure to have classmates call. Rhodes made me a short visit last fall. Lost my appendix to a Newport surgeon last Christmas, otherwise O. K." — And Moody says: "I am still professor of chemistry and director of the department at the College of the City of New York. My family life remains the same. I have a summer home in Maine and am there in vacations if not in Europe. But recently I have been across nearly every year. I had a half Sabbatical last year and was largely engaged in seeing North Africa. It certainly gave me a thrill. Afterwards in a semi-official capacity, I inspected chemical industries in Italy and France, and made many important contacts."

We hear from Rhodes through his son as follows: "I regret to say that my father, Frederick L. Rhodes, has been seriously ill for the past year. He is not able to go about and is sorry to miss the reunion. He sends his best wishes to all of the Class of '92. He says he would characterize these wishes as 'heartfelt' except for the fact that his heart has been feeling none too good." So you see that in one way or another we heard from a good proportion of the Class. I am very sorry that this news came too late to be included in *The Review* that went in July to all the Alumni, whether subscribers or not, but it was not possible to get it in, so that now it has to be served up rather cold.

I have been informed of the death of Parker Newman, which I think occurred suddenly in June last, but have not learned of any particulars.

I am pleased to announce that cards are out for the wedding of Kales' daughter at Harwichport, September 15. — JOHN W. HALL, *Secretary*, 8 Hillside Street, Roxbury, Mass.

## 1894

The Secretary and his wife brought to a pleasant realization the plans for their European trip to celebrate their coming of age together. The enjoyment of this unusual vacation was greatly increased by the appointment as official representative or delegate of the Institute to the Second International Congress on the History of Science and Technology in London, which was held at the Science Museum, South Kensington, June 29 to July 3. Arriving at Liverpool on June 22, a few days were spent in visits to nearby points, including a brief motor trip into North Wales.

Of special personal interest was a pilgrimage to Standish Hall where in the days of Queen Elizabeth, Sir James, one of the Secretary's direct ancestors, resided and, presumably as a reward for his title, was required to maintain men and horses which were to be ready for any service which might be demanded by the crown. It was of great interest to visit a place with such ancient family tradition and to see some of the actual structures which have stood for at least 12 generations. While the place is no longer occupied by this family, a Prescott was found to be living on the very next farm. This place is of interest to us of Boston as it was also the ancestral home of Miles Standish.

The International Congress on the History of Science and Technology was an interesting event. Delegates and representatives were present from most of the European countries, from Canada, the United States, Honduras, Guatemala, Paraguay, India, China, Japan, Egypt, South Africa, and Australia. The largest official group was from the United States and included three Technology men: Calvin W. Rice '86, J. W. Barker '16, and your Secretary. Aside from the regular sessions of the Congress, at which many noted scientists were present, there were unusually pleasant events — receptions, luncheons, lectures, visits to places of historic and scientific interest near London, and visits to Oxford and Cambridge. The opportunity to meet and hear such distinguished men as the Rt. Hon. Lord Dawson of Penn, Sir William Bragg, Sir Henry Lyons, Sir Frank Dyson, Dr. Karl Sughoff, Professor Gino Loria, and Professor Lavastino was one long to be remembered.

Aside from the Congress, the visit to London was most enjoyable. Although due to unavoidable circumstances it was not found possible to meet the Technology men at luncheon, as they had generously planned, I had most enjoyable calls on G. A. Mower, '81, F. S. Badger '93, and A. W. Hay '04. Attempts to call on several others, including A. M. Robeson '94, were sterile, as the men were all away from the city. This leads me to mention that the London and Paris ad-

resses in the Register are frequently mail addresses only, the men themselves being widely scattered.

In Paris we were delightfully entertained at luncheon by A. S. Garfield '86 and again by Ray Price and Mrs. Price. I spent several happy hours with Price who lives in Paris when he is not traveling or visiting his ranch in southern California. It was a great pleasure to talk over with him the good old times of the years from '90 to '94, and also to discuss the many topics of personal and class interest, and the business and public interest problems which have engaged his incisive attention. Let me suggest to any '94 man who goes to Paris that if he can find Price he will be well repaid. Incidentally, he lives at 92 Rue du Bac. On a Sunday at the Louvre we met Professor H. E. Clifford '86 of Harvard, and Professor H. G. Bradley '91 of Technology. Our continental tour included Switzerland, Munich, Nuremberg, and then a return via Heidelberg and the Rhine, Holland, and Belgium, to England. Visits to personal friends in England and Scotland added greatly to our pleasure.

One tragic event cast its saddening shadow on our otherwise happy vacation. Frank Lovejoy and his son George (of the Class of '34) had come to London just before our return there, and we had planned to meet. Before this occurred George suffered an attack of what proved to be an obscure form of appendicitis, which required a second drastic operation. Although he fought gamely, it was unavailing — the odds were too great. I know how deeply all his friends and classmates will sympathize with Frank and Mrs. Lovejoy in this great bereavement. As George was a student in my own department, my sympathy is accompanied by my own personal sorrow.

The Secretary has also to report the passing of H. H. Johnson, who had been the owner and editor of the *Tacoma Daily Index*, died on January 30. In his editorial capacity, Johnson had been a man of sane and useful influence in the far northwest for many years.

After a long silence, N. W. Dalton has been rediscovered. His address is 38 West 73rd Street, New York City, and the Secretary hopes he may soon know all about it. — M. F. Jones, after many years as special expert in the Factory Mutual Insurance Company, has at least partially retired and is living at 60 Washington Avenue, Natick — J. H. Kimball has become a resident of Belmont, his address being 67 Goden Street. He is designing engineer with Weston and Sampson, Boston.

A card from Mrs. de Lancey states that she and her son, Darragh, Jr., sailed from New York on September 2. As her card was mailed from the *Europa* on September 25, "mit Luftpost par Avion" and "Nach New York," it is inferred that she has returned to the U. S. A. She is certainly '94's champion traveler. How many crossings does this make? — SAMUEL C. PRESCOTT, *Secretary*, Room 10-405, M. I. T., Cambridge, Mass.



## 1895

Ninety-five to the fore! During the present world readjustment it is most interesting to all '95 men to note that at least one of their number has had the conception and the courage to suggest a concrete plan for stabilizing industry. Whatever may be the outcome, it is at least the first constructive plan offered and when thoroughly understood is believed to be workable. Every '95 man will follow with intense interest the development of the Industrial Stabilization Plan of Gerard Swope, President of the General Electric Company. It is commented that "no matter what becomes of the proposal the nation is richer for his offer of something concrete." Jerry Swope has been recently appointed a member of the Westchester County Park Commission. Congratulations to Jerry.

We are glad to note that Miss Henrietta H. Swope, daughter of Mr. and Mrs. Gerard Swope, who is an astronomer in her own right and discoverer of the "Swope Variables," recently gave an address at the American Museum of Natural History in New York City, under the sponsorship of the Amateur Astronomer's Association. Her subject was "Variable Stars in the Milky Way."

Charles F. Eveleth has moved from Camden, N. J., to Cleveland, Ohio. You will find Charley at 2030 East 115th Street. Your Secretary is waiting to learn why he has turned westward. — From the *Georgetown Evening News* we learn that Robert Reynolds, aged 28, has been awarded a \$10,000 prize for the best novel of 1931, in the opinion of Harper and Bros., publishers of New York. "Brothers in the West" is the title of the novel, which is the author's first published work. Mr. Reynolds was born in the governor's mansion in Santa Fe, N. M., in the same room in which Lew Wallace worked on the manuscript of "Ben Hur." His father was the late James Wallace Reynolds '96, who was appointed acting governor of the territory of New Mexico by President McKinley.

In times like the present, it is said that it is a most difficult task to find a job. This in part may be the truth; it is also too true that the task of a Class Secretary is beset with exceedingly more troubles, for while he has a job, he has few tools and materials to work with. Loosen up, '95! You are certainly doing something; tell your secretaries about it. — LUTHER K. YODER, *Secretary*, Chandler Machine Company, Ayer, Mass. JOHN A. GARDINER, *Assistant Secretary*, Graybar Electric Company, 420 Lexington Avenue, New York, N. Y.

## 1896

Those who read the first part of the story of Myron L. Fuller, describing the trip which he made with Mrs. Fuller to South America, must have become impatient for the last installment, and the secretaries wish to present their apology for the delay which has been caused by the pressure of other material in the last two issues of *The Review*. They do not

dare to hold it up any longer, for fear that another story will be forthcoming shortly of a similar nature. The following picks up the tale where it left off and continues through to the end:

Curacao, Dutch West Indies, a two-day run across the sunny, blue Caribbean Sea from Haiti, lies about 40 miles off the Venezuelan coast and Myron had always imagined it as a sleepy Dutch colony. To his surprise he found that it has become a big post, second only to Rotterdam among the Dutch cities, due to the establishment of big refineries by the Dutch Shell and other companies. Shallow draft tankers bring the crude oil from the Venezuela fields, while, after refining, big sea-going tankers take it to Europe and other parts of the world. Hardly an hour passes without a ship entering or leaving.

Owing to its low rainfall (only about 15 inches) the island is very arid, and is covered with cacti and other desert growths. Much of the water used in the refineries and for gardens in town is brought as ballast in returning tankers from Europe, while drinking water is obtained by distillation. The town, Willemstad, is quite Dutch in its older sections, with curved and step gables and red tiled roofs outlined in white. The streets are narrow, crowded and quaint. The Fullers took several automobile drives about the island, which is some 40 miles long, including visits to a large ostrich farm, from which many European zoos are supplied, and to the lagoons where salt is evaporated from sea water in considerable quantities, and to the local bathing beaches.

In French Guiana they came in contact with the penal colony. A *libère* is practically forced into marriage with negroes in the absence of other women. After his term as *libère* has expired he is free, but again the lack of any way to earn money enough to take him back to France generally means he remains until he dies. The government makes comparatively little effort to prevent escape, but there are hundreds of miles of jungle between there and Brazil and the neighboring colonies of Dutch and British Guiana either make them move on or surrender them to the French. Several were returned on the ship the Fullers were on.

Of automobiles there is only a handful. Cayenne, however, claims the distinction of one of the oldest cars in actual use, a Ford of the vintage of 1905. The price of room and meals, including wine, at the leading hotel at Cayenne was \$1.20 a day. Two of the meals were seven course affairs at that, while the dining room was tiled and walled with marble. As a matter of fact, however, it must be admitted that the once palatial building is now barely holding together, and the furnishings so dingy that it takes a second look to see what they are. Every dish of food reeked with garlic and was served by shuffling, bare-legged negro women. One first picks it over on the lookout for stray cockroaches, snaps off the ever-present ants, shoos away the persistent flies and looks around for

passing mosquitoes, and then hoping for the best, takes a mouthful. Notwithstanding the colony is essentially a penal settlement, they did not ask a question when the Fullers entered, but they are far more particular as to those who leave, and they had to show their passports and all their credentials before they could go aboard the steamer on departing.

The last trip into the interior was up the Orinoco river, which was ascended until the low stage of the water stopped further navigation at a distance of some 300 miles from the sea. The river was entered at the Serpent's Mouth through one of the many channels of the delta, still inhabited in the vicinity of the sea by Indians as primitive as when the region was first seen by the Spanish during the lifetime of Columbus. They came out naked in dugout canoes to beg for bread, chunks of which were thrown into the water for them to pick up when the boat passed. Further up, the jungle at the edge of the river is replaced by narrow fields and extensive cocoa groves. The Indians here are civilized and the villages of some size. Everywhere at the water's edge are seen little stockades six or eight feet square erected as protection for the women from the cayman or crocodile while washing clothes at the water's edge. They become indifferent, however, and at one point women were seen unconcernedly washing and men were standing in the water fishing within a few feet of a 15-foot crocodile floating on the river's surface. Sooner or later the latter gets his victim and then the stockades are crowded until the incident is forgotten. The delta is largely comparatively open country of tree-sprinkled savannas above which rise numerous bare rounded granite hills with a thin growth of thorny brush and cacti characteristic of the semi-arid climate.

The people of this part of Venezuela consist of a few comparatively pure whites of Spanish descent, Indians, Negroes, and a high percentage of half-castes. They proved far more kindly and attentive to the wants of foreigners than would be the case in America, but the same people would unblushingly overcharge many times on any purchase and would pilfer one's property on every opportunity. Lack of business integrity is one of the greatest drawbacks to progress. If a man is observed to be making money a way is found by politicians to black-mail his profits from him or suffer the alternative of being taxed out of business. Concessions are obtainable only on the basis of a half and half division of profits, and are likely to be rescinded at any moment. The result is that generally only those standing in the good graces of the government can achieve business success and then only when there is no one higher up or more powerful who covets their wealth. Under such conditions a revolution and a new government become sooner or later inevitable. At the present time there is great unrest, and trouble is likely to break out any moment, especially during fiestas. The day after the Fullers were in Caracas in December, although on

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the surface things were quiet, some 12 men were killed in a political outbreak. A large guard of soldiers accompanied the Orinoco steamer which had been fired on a few trips previously.

Locke was on the job the greater part of the summer, but spent the larger part of August in Rye, N. H. Mrs. Locke and he made their annual trip to Ontario in September, returning by way of the Technology summer mining camp at Dover, N. J. Unfortunately no classmates were seen along the way. Rockwell kept his golf in good shape and made a number of short trips. One was a few days' visit to Billy Anderson at his summer home in Biddeford Pool, Maine. Another was his regular trip of about ten days to Tennessee to see his brother and other members of the family. On his way back he stopped off in Washington. In addition he has made short excursions to Rhode Island and to Maine.

A number of classmates have called on the Secretary during the summer. On August 18, Harry Baldwin dropped in from Lynn, but unfortunately the Secretary was away from his office. The same misfortune occurred when Fred Haskell Smith called on August 27 with his sons. He is located in a rubber plant at Mansfield, Ohio, and was making a trip east. However, Rockwell was more fortunate and happened to be at home when Smith called on him. The purpose of the trip was to place the two boys in educational institutions, and it is understood that one of them is going to the Ohio State University at Columbus and the other is to enter Technology. Most of us have not seen anything of Smith since he attended the reunion at Squam Lake, N. H., 20 years ago, and it was therefore a very keen disappointment to the Secretary to have missed him.

Better luck was had, however, when J. Lloyd Wayne called on September 2. He announced that he was a very lively looking corpse, and had so far recovered from his serious illness that he had been able to play a little tennis. He told a most interesting story of his record carbuncle, which kept him in the hospital for eight weeks, and developed a cavity on the back of his neck the size of a man's fist. His little sojourn caused him to lose 70 pounds, but since he came out of the hospital June 27 he has been picking up again, so that he casts a magnificent shadow, and bids fair to be restored to his former self. He was on a trip which included Pittsburgh, Gettysburg, Philadelphia, New York City, Boston, and Cleveland. He had seen various classmates along the route and was scheduled to return to work with his old pep on September 8. Classmates will be sorry to learn the report from Wayne that Guy Wall had lost his wife last spring after a very sudden illness. Wayne sees quite a lot of Joe Stickney, who is a very busy man.

It will be recalled that at the time Wayne went to the hospital his oldest brother, a man of 70 odd, came to Indianapolis to help take care of him but had the misfortune to be struck by an auto-

mobile two or three days after his arrival. He was taken to the same hospital in which Wayne was located and given a room on the floor above. He had two broken ribs, one of which had punctured his lung, and the physicians had little hope of him, but he fooled them and is now entirely recovered. While they were in the hospital they had private telephones installed to connect the two rooms so that they could talk back and forth at all times.

Cards to the secretaries from Clark Holbrook announced his safe arrival with Mrs. Holbrook in London after a perfect crossing with not a wave on the ocean. They were all set to enjoy the good things which Europe provides. — The Secretary was happy to receive a note in September from Eberhard A. Lindenlaub, who identified himself as the son of Armin F. Lindenlaub, a classmate whom many of us will remember, and who has been living in Germany ever since he left Technology. The boy is located at 47 Spring Street, Glouster, Ohio, and he expressed a desire to get in touch with his father's old classmates.

As these notes are being written Paul Litchfield is in the public eye, on account of the maiden trip of the airship *Akron*, built by the Goodyear-Zeppelin Company of which Paul is President. We all envy his opportunity to be aboard on the first flight of this wonderful ship. — Professor Bradley Stoughton, who is the head of the Metallurgical Department at Lehigh University, has been elected President of the American Electrochemical Society for the year 1931-32. — Classmates who were victimized by the swindler who posed as the son of a classmate will be interested to learn that the culprit has been apprehended in Montreal, where he gave the name of Clarence R. Emedy. His operations seem to have been very widespread among the graduates of many educational institutions.

Con Young dropped in on the Secretary on September 25 on his way back to Bass River from his annual trip to the Adirondacks, where he reported he had been out of luck this year, as the fishing was very poor. His plans were to stay at Bass River until about the middle of October, and then start off for Fort Myers, Fla., in short jumps, stopping over to see friends in various places along the way, so as to arrive in Florida sometime during November. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M. I. T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

## 1898

Frank Coombs writes on August 26: "Why not write to Paul Johnson at Altadena, Calif., and ask him for some news? He came into the office yesterday after three months in Alaska, and had the choicest growth of whiskers you ever saw — even more luxurious than those of Edgar Weiner or Roger Babson. Paul seems to be a sort of magician, and you never know whether the next move out of the hat will produce a white rabbit or a

pink elephant. He leaves California with a small Yankee boat and comes back in a huge Canadian craft over 107 feet long, containing every dingus and gadget ever designed by man. We have made a tentative agreement to meet at the Thirty-Fifth Reunion in 1933, he to go in this wonderful craft by way of the Panama Canal, while Mrs. Coombs and I plan to cross the continent in our leaping Lena, if Lena will only survive that long. As Lena has already gone close to 60,000 miles and business is all shot, you can see why the agreement is only tentative."

From the *Mining Journal* of July 30, we have the following: "F. C. Gilbert, professor in the metallurgical department of the Montana School of Mines, is consulting engineer for the Ballard Mines Syndicate, organized to operate the old Ballard mine in the Woodland Park district, 12 miles east of Jefferson City, Mont."

Roy Peavey was the principal speaker at a banquet of the Manchester, N. H., Chamber of Commerce last May. We will quote a little of his talk as follows: "The present period is the antithesis of the insane boom years which culminated in 1929. At intervals of several years this country has indulged in frenzied over-expansion; but at no time in its history have its excesses been of a more flagrant character than those for which we are now undergoing a correction. We wonder at the present hardships, ruin, grief, and disaster which is yet being enacted before our eyes, but the reason is not hard to find. No — the inevitable law of action and reaction is always working. We can not escape it.

"But we can be thankful that the corrective process is now well advanced. We are that much nearer a more normal course of business and finance. As I look back on the causes of our well remembered speculative orgy, I see 4,000,000 men — young men — back from a victorious world war, filled with ideas of speed and efficiency. They were trained to get things done — to let nothing prevent them from attaining their object. Old methods in factory and field had been scrapped, things must now be done on a huge scale. Capital abounded and floods of the world's gold were in our coffers.

"The fever was in the air, and after a brief pause in the 20's the country surged forward under this new inspiration. Credit came rushing forward. If you had no money for purchase of goods, why, it could be supplied. Already, the millions of our populace were being carried on margin payments for the purchase of securities, and credit for installment purchases of all descriptions also came forward in an avalanche of inflation. We blew the bubble as hard as we could blow it — and then it burst!

"The explosion occurred nearly two years ago, but we are still trying to pick up the pieces. Yes — this is the post-war depression, and it is a major depression in which many other countries, as well as our own are involved. Such a situation cannot be corrected in a moment. The



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late overexpansion went much farther than anybody expected, and hence the corrective period must be a protracted one. . . .

The following clipping from the Boston *Traveler* of May 18 gives us some idea of the activities of Hollis Godfrey: "Means whereby the current business situation may be improved will be discussed at a meeting June 2 of the Engineering-Economics Foundation, it was announced yesterday by Dr. Hollis Godfrey, the President, who said he would present a paper in which the foundation would tell the results of 27 years of research in the field of consumption.

"Dr. Godfrey, who has a national reputation in the engineering-economics field, with special reference to wealth and its uses, declared that the foundation had completed the first scientific determination of the 'means usable by the individual and the group to break the present business deadlock.' He asserted that 'frozen business and financial conditions' have their course in 'frozen human capacities.'

"He placed the main responsibility for crushing the current depression upon the individual executive who 'must learn how to adjust himself to the unprecedented conditions.' After the June 2 meeting there will be two conferences on dates to be announced later, devoted to the 'application of the results of the research to specific problems, from individual and group standpoints.'"

Gordon Jacoby, son of our classmate, graduated from Technology in the department of civil engineering a few years ago. He was married shortly after, and now has a daughter. He dropped in the other day and we learned that his father Areli H. Jacoby was principal of the high school at Ashby, Mass., last year, and enjoyed the job, and plans to continue with it this year. We can see that Jake has a dignity that would command the respect of the boys and girls of a high school, and we can see that his scholarship would fit him for the task, yet we have some amazement at the transition from a dye stuff chemist, a successful business executive and leader, a country gentleman of leisure, and a pedagogue.

With deep sorrow we copy from the Denver *Post* the news of the death of Dan Blackmer: "William D. Blackmer, 55 years old, widely known mining engineer and brother of Henry M. Blackmer (wealthy oil man formerly of Denver, now of Paris), died Tuesday, August 4, at Nogales, Ariz. He had been ill several weeks.

"Mr. Blackmer was born in Worcester, Mass., and when a young boy accompanied his mother and brothers to Colorado Springs. He attended the public schools and later was graduated from Technology.

"He had made a study of minerals, and this knowledge made him one of the outstanding mining men in the Southwest. For many years he lived in Mexico, where he was at one time manager of the Palmerto Silver Mine in Simalao. He is survived by two brothers, Henry M.

Blackmer, Paris; and C. F. Blackmer, Vice-President of the American Steel and Wire Company, Cleveland, Ohio; a nephew, Myron Blackmer, and a niece, Mrs. Erle Kistler, Denver."

We note the first instant to our knowledge that a large college building has been named after a member of our Class, R. M. Hughes of Course V. The following is from the October number of the *Journal of Chemical Education*: "Miami honored one of her most distinguished living alumni when the board of trustees, with the recommendation of the President of the university, voted to name the newly finished chemistry building Hughes Hall. This is named for R. M. Hughes, Miami 1893, professor of chemistry 1898 to 1913 and President of Miami University 1913 to 1927. In 1927 he became President of Iowa State College.

"The alumni, friends, and faculty of Miami University are pleased to commemorate so distinguished a name as Hughes by so handsome a building. They believe that it is a fitting testimonial of their appreciation of R. M. Hughes as an alumnus, loyal friend, chemist, teacher of chemistry, and administrator."—ARTHUR A. BLANCHARD, *Secretary*, Room 4-160, M. I. T., Cambridge, Mass.

## 1899

Your Secretary is still resident in Washington at the same address where news and information of members of the Class will be gratefully received. Readers please call attention of class members to the fact that if news is not forthcoming the column will carry fiction.—W. MALCOLM CORSE, *Secretary*, 810 Eighteenth Street, N. W., Washington, D. C.

## 1900

Appleton and Company, New York, has recently published a new volume in their popular New World of Science Series which is of interest to this Class as it is from the pen of Morton Mott-Smith, Ph.D., named "This Mechanical World." It is filled with absorbing facts presented with admirable simplicity of expression and a book that makes the world a more understandable place. Congratulations on the new book and may your success continue!

Allen has safely returned from his summer in Europe and a future edition of this column will undoubtedly carry a detailed report of his travels.—Mr. and Mrs. Louis J. Warren of Manoa Valley, Honolulu, Hawaii, announce the engagement of their daughter, Miss Winifred Louise Warren, to Robert R. Thurber. Miss Warren is a graduate of Wellesley College and recently has returned to her home in Hawaii after a year of travel in Europe. Her father is one of Honolulu's foremost lawyers and a member of the firm of Smith, Warren, Stanley and Vitousek in that city. Mr. Thurber is the son of Capt. and Mrs. Clinton D. Thurber, who are now living in Orange, N. J. His father, who has been in the navy since 1903, has seen during the past seven years active duty at the navy yards in New York, Boston and at Portsmouth, N. H.

Mr. Thurber graduated from Princeton University with the Class of 1926 and took his degree from the Harvard Law School in 1929. Since that time, he has been engaged in the practice of law in Boston and is associated with the firm of Herrick, Smith, Donald and Farley. He is a member of the Harvard Club of Boston and the Longwood Cricket Club. The wedding will take place in Honolulu early in October. After their return from Hawaii, the bridal couple probably will make their home in Brookline. Mr. Thurber is the son of C. D. Thurber of our Class, Course I, who was transferred from Portsmouth Navy Yard to Headquarters of Third Naval District in New York City last March.

A bust of Karl Friedrich Gauss, eminent mathematician and physicist, has been placed in the corridor on the second floor, under the dome, at Technology in honor of his great grandson of the same name who is an alumnus of the Institute in the Class of 1900. The bust was originally sent over by the German Government to the Chicago World Fair in 1893. It was recently presented the Institute by the mother, sister, and brother of the Technology graduate.

The older Gauss, who ranks with La Place and La Grange among the masters of mathematics, was born in Brunswick, Germany. He was the son of a bricklayer, and was indebted to the reigning duke for his education at Caroline College and Göttingen. Later he served as director of the Göttingen Observatory and was professor there from 1807 to 1855, practically never leaving the observatory for the outside world. He made valuable contributions to optics, astronomy, and the geodetic survey. Constructing a building free from magnetic disturbances, he sent a telegraph message along a crude line. The "gauss," the unit of the magnetic field, has been named in his honor.—C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

## 1901

Since writing you last, I have had a most enjoyable visit in Buffalo, where I was the guest of Loring Danforth at the Athletic Club of which he is a former President. Further, we had a small but earnest class reunion at dinner with Loring, Sol Stone, Nat Patch, and George Fisk. Your Secretary was the guest of honor, or, as it is technically known, the bride. The night before there had been a big Technology gathering with President Compton as the feature—that's why I stayed away, these comparisons are odious—but it was neither cold nor warmed up party with which I was regaled. I solemnly counsel any visiting fireman from the Class who passes through to get in touch with any one of the four; you'll not regret it. Dan and Sol Stone have appeared so frequently in these columns that there is but little that I can add—discreetly. Nat is President of the American Foundryman's Association, which I gather is some job and some association. George has been identified with a variety of posts in the municipal



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organization. Buffalo is just completing a new City Hall, a \$7,000,000 structure, and all of our group have played important parts in its erection. I suggested that we chisel 1901 on the corner stone or some other inconspicuous place, but the local group demurred as they stated emphatically that there had been no chiseling in the project. Anyhow, Buffalo is a mighty attractive town and the cordial greetings of classmates not the least of its pleasing features.

By the way, the annual yell has been circulated and one of the first to reply was my host of a few nights back; namely, Sol Stone. He is still dallying with Flora and records the happy fact that Bob Montgomery, one of our group of reigning monarchs, sent him a bevy of Talisman rosebushes as a Twenty-Fifth Wedding Anniversary present. Bob will soon hear from John McGann, another Flora addict. This rose, one of the most popular in the country, is the product of Bob's conservatories. Though the occasion was rosy, the season was inclement, to which I attribute the failure to place a chaplet of the blooms on my brow.

In my last letter, I noted that I had received a very attractive pamphlet dealing with the work of the School of Architecture and Allied Arts of the University of Oregon at Eugene. I've always wondered if the founder of that town didn't like his last name or if, perhaps, he were like Topsy. It's so abrupt, somehow, and with a touch of familiarity repellent to the conservative easterner. Perhaps, Ellis knows about it; I must think to ask him. If he doesn't, it is the only lacuna in his seeming omniscience. For Ellis is Dean of this institution — among many other far-flung activities, chief of which is guiding the footsteps of Bill Holford, the Boy Scout. Of whom, more anon. Dear Bill, this is not an abbreviation for anonymously. The editor makes me sign these letters, and God knows I'm careful. 'Sall right. Anyhow, coming back to Ellis, he lists about a hundred things that are taught in his show. There are also beautiful pictures in the book. One shows what is seemingly a devotional exercise as a group of young women are standing in rapt contemplation before a square of fabric. Presumably, Ellis is behind the arras. There's another one that shows an "interior design" intended, so I should gather, for a collector of coffins. Some of them look very comfortable. There's another page devoted to mural decoration with a girl standing in the doorway. They have omitted the face — the libel laws are very strict on the coast — but her attitude betokens a trepidation for which the inebriate metal founder pictured above offers ample warrant. Later on there are some stout ladies in a variety of pleasing poses. I am particularly intrigued with a graphic likeness of a moron, probably one of Eugene's descendants, clapping her hands. Her anatomical proportions are Nietzschean in their contours. She is super all right, particularly as to hands and feet. Under "craft-work" are shown a number of spurious antiques. I applaud

the candor of the native son. But the only way to glimpse all its beauties is to send to Ellis and ask for a copy. Your attention is especially directed to the "composition study" which either refers to the material or the lady's frame of mind. She'd be an ornament to any home, or several. There's a poster, too, which symbolizes the Canadian border that's a masterpiece. But you must all see it; write to Ellis for a copy.

Charlie Mace writes from the ostentatious address of 1 Madison Avenue, N. Y. — this is like the low registration numbers and bespeaks hauteur in the proud possessor. He missed the Thirtieth as the Manufacturing Chemists Association and the "Synthetic Organics" had a joint orgy at the same time and Charlie, as an official, had to provide for the tautomeric rearrangements which made the latter miscible with the former. By the way, Lamot du Pont is President of the first named which probably explains his failure to connect with Oyster Harbors. Well, we avoided all synthetic complications in that New England Eden. Charlie is dating himself up for 1933; take heed, ye who read. By the way, the alias of Charlie's group is the snappy little caption — the Synthetic Organic Chemical Manufacturers Association of the United States of America — and all other way-stations. Charlie didn't name it, it was mother's wish. Well, I've got to stop now — why now, sez you — but don't forget to write Ellis. And keep it away from the children. — ALLAN WINTER ROWE, Secretary, 4 Newbury Street, Boston, Mass.

## 1904

The Annual Class Reunion was held as usual at East Bay Lodge, Osterville, on June 26, 27, and 28. No special occurrences happened during this Reunion, but those who attended had just as good a time as usual. Of course, the principal entertainment was golf, played at the Oyster Harbor course and at Hyannisport. No scores were kept, but as usual the best golfers played the best games. On Saturday night Don Galusha entertained the gathering for two hours with a very fine exhibition of moving pictures which he had taken himself. Some of them were taken during his trip to Russia two years ago and the others were miscellaneous subjects both in black and white and in colors. The exhibition was very interesting and highly appreciated by those present. The boys attending the Reunion were: Dennie, Jack Draper, Mert Emerson, Haley, Munster, Parker, Rockwood, Gene Russell, Phil Sweetser, Sutton, Read, Hartshorne, Galusha, and your Secretary.

A clipping from a Santa Barbara newspaper under date of July 14, 1931, records the death of another classmate. "Frederic Nickerson, 1515 Chapala Street, died yesterday afternoon in a local hospital, after an illness of several years. He was a veteran of the World War. Mr. Nickerson came to Santa Barbara from Boston as a boy with his parents, the late Mr. and Mrs. A. A. Nickerson, and for a

number of years lived in Montecito with his family. He attended the Massachusetts Institute of Technology, and after his graduation practiced his profession as an architect in Atlanta, Ga. He was married in the east. A year ago Mr. Nickerson was brought back to Santa Barbara for the benefit of his health, which, however, did not improve. He had been confined to the hospital for the last five weeks."

In previous issues we have had some inkling as to the activities of Guy Riddell and I am glad to include in these notes a more detailed account of his activities along varied lines. The first is an extract from a letter which he wrote to Carle Hayward. A much more complete history of Riddell's activities was contained in an article in the *Mining Journal* for June 30, 1931, and I think it is worth including in these notes.

"Imagine this will find you off somewhere enjoying a good vacation. Or do you just wait for summer to come so that you can do some big job that you've been itching to get at all the year? Over here I have a month's vacation looming up and I don't quite know what to do with it. Have been out to Germany once this year and guess I will take a German plane out of Moscow soon and head for Switzerland where the folks are living.

"My work takes me off on many trips, to all parts of the U.S.S.R. and I cannot say I am in need of any vacation that means travel. Never felt better, or more interested in a task, though. I must take a look at practically all the major mines, mills, and smelters — non-ferrous — in the land. This means Moscow to Vladivostok, Leningrad to Tashkent. A recent month in the Caucasus Mountains was a glorious trip. The mines are a bit ancient in equipment, the mills splendidly modern, the smelters in both classes, but on the whole whipping into good shape. Big things are doing — it stirs you to your foundations.

"I do not expect to get back before next year. The family is coming in for a few months' visit this summer. Am happy and comfortable — could not ask for better conditions as far as I am personally concerned."

The extract from the *Mining Journal* follows: "Another prominent American mining engineer has been called to assume far-reaching responsibilities in the rationalization of the Russian industries. Guy C. Riddell of 551 Fifth Avenue, New York City, has been chosen as general consultant on mining and metallurgy by the Central Control Commission — NKRKI — the powerful government department by which all Russian industry is held to account, in the execution of the Piatiletka (Five Year Plan). This body bears somewhat the same relation to industry as does the G.P.U. to society. Next to the latter it is probably the most feared body in Russia today. With more or less mandatory powers, it diagnoses the status of the plan throughout the length and breadth of the land at construction and production centers, rec-

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ommending suitable measures for maintaining the pace. As technical advisor in the field of mining, ore concentration, and metallurgy (non-ferrous metals), Mr. Riddell left in February with interpreter and party for an extended tour of the copper, zinc, lead, aluminum, and rare metal operations of the Urals, Siberia, Turkestan, Kazakstan, and the Caucasus regions.

"Mr. Riddell started early in life as a globe trotter. Graduated from the Massachusetts Institute of Technology in 1904, he entered the service of the American Smelting and Refining Company, at East Helena, Mont., where he acted as chemist, construction engineer, and assistant superintendent, occupying the position of superintendent of the plant from 1910 to 1916, during which time and under his direction double roasting of lead-zinc sulphides, a notable advance in smelting practice, was discovered and introduced.

"In 1916 exigencies of production in the World War called him to Australia for Broken Hills Associated, where he directed reorganization, rebuilding, and operation of the Port Pirie lead smelter, the largest plant of its kind in the world.

"From 1919 to 1920 he acted as metallurgical advisor to U. S. Tariff Board and Chief of Metals Staff. Following this work he acted as consulting engineer, director, and New York manager of Wah Chang Trading Corporation, importers, exporters, and industrial engineers of New York and Shanghai, an organization which developed and controlled the anti-monopoly markets of the world for many years.

"In 1924 Mr. Riddell became chief of the metals division of the Department of Commerce, acting as personal advisor to Herbert Hoover on many phases of oil, shale, and conservation problems of the United States and foreign countries. Since then Mr. Riddell has been in consultation practice, making extensive surveys and recommendations in the United States, England, Mexico, Panama, Venezuela, Russia, and the Far East. His published articles on these countries and their mineral resources have been widely read. He is a director in oil, coal, and mining companies, has engaged in a wide range of research work, and is an authority on economic phases of mining and metallurgy. His southwestern affiliations include Foster Mines at Shadow Mountains, a large gold-copper development in California.

He is chairman of important committees in many technical societies and a member of the Bankers Club of America. His technical writings for the tariff commission and his contributions to the literature of mining and metallurgy are too well known to be commented upon. Significant among his works is his contribution of two chapters to Liddell's "Handbook of Non-Ferrous Metallurgy." His wife, Isabel Anderson Riddell, and daughter, Virginia, are living in Switzerland during Mr. Riddell's travels in Russia, and his son, Robert, is enrolled at the U. S. Naval Academy at Annapolis."

Under date of September 23, an Associated Press dispatch from Los Angeles comments on the Air Mail Service as follows: "The 20th Anniversary of the first air mail flight was commemorated here today. Frank H. Hitchcock, then Postmaster-General of the United States and now a newspaper publisher of Tucson, Ariz., and Earle Ovington, Santa Barbara, Calif., the pioneer in carrying the mails aloft, were the central figures in the ceremonies.

"As they gathered on a field at Nassau Boulevard, Long Island, N. Y., on September 23, 1911, to dispatch the first air mail, so they met again, this time on the newest of Los Angeles' air terminals, United Airport, to commemorate 20 years of air progress. Ovington took the controls of a tri-motored Fokker monoplane bearing eight passengers and 300 pounds of mail, and departed over the air mail route to Phoenix and Tucson, Ariz.

"In 1911 Ovington flew a distance of nine miles from 'Aeroplane Station No. 1, Garden City Estates, N. Y.' to the Mineola Post Office with 50 pounds of mail in his lap. He used a single seated Bleriot racing monoplane, capable of a speed of 72 miles an hour. 'We'll treat his mail right this time,' said Ovington, who appeared in the helmet he wore on the first flight. 'I couldn't land at Mineola the first time, so I tossed the mail out and it scattered all over the ground. I remember the postmaster got a rake and raked it together.'

"Accompanying Ovington and Hitchcock was the aviator's mascot — a French doll, dirty and bedraggled, attired like a gendarme. It flew with him on that first 10-mile air route which has grown to an air mail system requiring 400 planes, 300 pilots and covering 23,488 miles, criss-crossing the country. Officials of the American Airways and Los Angeles city officials were the passengers to Tucson."

Dick Hartshorne's son, Richard, Jr., and Ed Parker's boy, Philip, are roommates at Bowdoin College, Brunswick, Maine, this fall. I hope that the two boys equal the brilliant records of their fathers at Technology.

I have now reached the bottom of the pile of notes that I had laid away for inclusion in this issue, and I hope that before the time arrives for putting together the notes for the January issue, I shall receive a number of communications from my classmates. — HENRY W. STEVENS, Secretary, 12 Garrison Street, Chestnut Hill, Mass. AMASA M. HOLCOMBE, Assistant Secretary, 3305 18th Street, N.W., Washington, D. C.

#### 1905

Occasionally there comes a long and interesting letter that we especially enjoy sharing with the Class. Jack Flynn is responsible for just that sort. "N. V. Stoomvaart Maatschappij, Nederland, 'Pieter Corneliszoon Hooft.' On the blue Mediterranean Sea, off Crête. I am an awful rotter not to have written you since 'God knows when!' Your note of December 5 followed me out to the

Orient and was delivered in Singapore or Bangkok — but what with the heat and the pother and one thing and another, I haven't written.

"During the past three and one-half years, I've been wandering over the world a lot. My kid sister, Esther, travels along with me and keeps the records. She says our mileage is nearly 60,000 — seems reasonable to me as we've made several trips to Rio, Santos, Sao Paulo and the hinterland and underland of Brazil, Montevideo, Buenos Aires and Santiago (seven trips over the Andes down that way). I met Red Glidden in Santiago about two years ago — the first time since 1905 — and almost met him again last September at Morococha where he was bossing an important tunnel operation for Cerro de Pasco Copper Company. A rather nasty blizzard developed when my train got to Morococha station and, as I was not accustomed quite to high altitude (14,000 ft.), I thought it unwise to attempt the climb to Glidden's office.

"Repeated revolutions in Peru since last August and revolutions in Argentine, Bolivia, and Brazil accentuated the bad business conditions throughout South America caused by the fall in price of sodium nitrate, copper, silver, tin, wheat, coffee, cocoa, and so on, and I became fed up with Latin America. After short visits in Ecuador (quite a lovely place but people are poor as church mice — the next President is to be a Technology man, by the way — looks like a first class man and a good bet for Ecuador) and Colombia, I headed north through Panama, my much loved old stamping ground, intending to enjoy the pleasures of civilization for winter. Fate threw a monkey wrench in my gears! My people in Pittsburgh radio'd the ship that Singapore needed just such a man as I, and would I rush by fastest transport so they could tell me about it — and could I get over to London where there was some more dope and sail for Singapore about the middle of November. So I eloquently radio'd them 'Yes,' abandoned my ship at Havana at one o'clock P.M. November 1 (my sister wallowed on to New York with the baggage and had a sea-sick trip of it), flew at 3 P.M. to Miami and entrained for Pittsburgh the same evening. Of course I ran into wintry weather (third winter last year and a bit o' the flu each time Winter and I collide), but met up with Esther a couple of days later on the comfortable and elegant *Leviathan*.

"England looked snug and pretty from the Southampton-London train, but London was murky. It was delightful, however, to be cared for in the Grosvenor House. I had almost forgotten what 'proper service' was — it is so well done, so competently! After meeting my English associates (and becoming quite fond of them in spite of my wild-Irish forebears and their cries of hatred vs. the *Sassonachs!*), I rushed across to Düsseldorf, where I tried out the German 'Blacky' injected into me 28 years ago. We have a *Blaw Knox Gesellschaft im Deutschland*, already, and a fine big monumentally constructed German engineer as director who



1905 Continued

treated me to wondrous Moselle and Rhein wines (yes, we did a spot of work, too) then to Paris where our *Cie. Française Blaw Knox* is doing us proud, thence via Bern to Milan to visit our *Compagnia Italiana Forme Acciaio*, and after a side glance at the cathedral I was whisked down to Genoa and wafted away to Singapore." (To be continued.)

In the list of graduates of the Institute last June was the name of W. D. B. Motter. In reply to our inquiry, Bill wrote: "I have been studying during the last two years. I get tired of filling in blanks by scratching out the 'graduated from' and inserting 'educated at' and drawing a line through the space following 'degree.'" The Class of '05 congratulates its latest graduate.

A. W. O. L. for three years, Capt. Bob Beard has been located at 2 MC, Q.M. General's Office, Washington, D. C. — Fred Poole resigned on June 1 as consultant for Bigelow, Kent, Willard and Company of Boston, and is now associated with the Armstrong Cork Company of Lancaster, Pa., as economist. — Bill Spalding spent a few weeks in the spring in Tennessee and Virginia "but otherwise have been sticking pretty close to my desk at 535 Fifth Avenue, New York." — Jimmy Banash has moved his office to 230 North Michigan Avenue, Chicago, of course. — Harry Charlesworth was host to the King of Siam with a demonstration of television at the Bell Telephone Laboratories. — Harry Wentworth was recently added to the board of directors of Warren Brothers Company, builders of roads and road machinery. — The middle of August is not a convenient time to prepare class notes, which will explain why ours did not appear in the October number.

After seeing the Twenty-Fifth Reunion movies, Frank Payne wrote: "I got a great kick out of this film, particularly the close-ups. I was able to recognize most of the fellows. They have changed about as much as I have. Only their own wives would probably recognize them from the students they were in 1905. You chaps like Bob Lord, Charley Boggs, Henry Wentworth, and Ralph Segar get a lot of free advertising, always in the limelight. That was a fine close-up of that very distinguished naval architect, Henry Keith — a fine-looking fellow, Henry. Another man that I was delighted to see a picture of was Prichard. I have not seen him for 20 years, at least. Chesterman has certainly changed from the days we knew him. He was as much of an 'apple picker' as I was. Look at him today, the fat Vice-President of the A.T. & T. Too much prosperity, Ros."

The main office of Stone and Webster has moved to New York, but Warren Loomis says, "I do not expect to go to New York. Hope not anyway, as Boston and New England are good enough for me." — T. M. Gunn has been located in the research department of the Vacuum Oil Company, Paulsboro, N. J. — The Boston *Herald* ran a fine picture of Harry Wentworth, Secretary of the Massachusetts Golf Association presenting

tournament prizes on August 2. — Ed Poor's Hygrade Lamp Company is now the Hygrade Sylvania Corporation, a combination of three companies, still in Salem. — Bob Lord was laid up in the early summer for several weeks but then returned to his tannery. He wrote that calls by Doc Lewis, Bob Folsom, Hub Kenway, and others helped make the time go. — Grafton Perkins was abroad for five weeks in May and June conferring with Lever Brothers' executives in England, France, and Germany. — George Wald's corrected address is 1001 Los Angeles Railway Building, Los Angeles, Calif.

Ocean yacht racing has become a habit with Ros Davis. In June, he sailed in the Cape May Race on *Duckling* which, after the statisticians had completed their work, was declared winner of Class B and of the combined fleet prize (42 boats), the latter by the close margin of 16 seconds. Ros says: "It was not a strenuous race. The winds were light to moderate and the going, except for the first night, relatively smooth. The race was won by a good boat with good navigation, good sailing and, probably, good luck. Of interest was the finding of Winterquarter light vessel at night in a fog, confirming our position by sounding, and the 60-mile sail up the Delaware shore the final day, in a light following wind, when we passed eleven competitors and slipped across the line to win. In our crew were two who sail regularly at Marblehead and their knowledge of sails and steering was a great factor in our success."

"As we were about to turn in on *Duckling* in Cape May Harbor after the finish, a call came from the darkness 'Is Ros Davis by any chance on board?' 'Right here.' 'This is Cortland Babcock.' Unfortunately, I was unable to see him, either then or later, as I left for home early the next morning. But I learned that he had sailed on *Sea Witch*, a schooner from Warwick Neck, R. I., which won fourth place in Class A. This was not bad with 18 starters. Charlie Boggs, who sails pretty regularly in ocean races, could not be found. Perhaps he declines anything short of Bermuda." We had hoped to offer Babcock's account of the race, but it did not come. Boggs reported the 1926 race, Davis those of 1928 and 1930. This year it was someone else's turn.

Once more a classmate passes on. The following is from an Ottawa, Ill., paper. "Waldemar S. Richmond, 49, secretary-treasurer and general manager of the Marseilles Land and Waterpower Company, and noted hydraulic engineer, died at his home, 410 Pearl Street, shortly before seven o'clock this morning (April 11, 1931) following an illness of several days of complications originating with a carbuncle. Mr. Richmond, who was born on October 14, 1881, in Cheshire, Mass., was educated in the schools of Adams, Mass., and the Massachusetts Institute of Technology, where he was graduated in 1905 with a degree of bachelor of science, and where he later

became an instructor, came to Ottawa from the lake survey of the U. S. Army, where he had served during the war as an expert hydraulic engineer with the rank of captain, in charge of the diversion of water at Niagara Falls and the Chicago drainage canal, with headquarters in Detroit and Buffalo. Prior to that time he was in the service of an irrigation company in the west as engineer. About a year ago Richmond became President and principal owner of the Northern Illinois Business School, a position he held at the time of his death. Richmond was a member of the Ottawa Country Club, Ottawa Rotary Club, Electric Society of Engineers, and American Society of Civil Engineers." — ROSWELL DAVIS, *Secretary*, Wesleyan University, Middletown, Conn. SIDNEY T. STRICKLAND, *Assistant Secretary*, 20 Newbury Street, Boston, Mass.

## 1906

The Twenty-Fifth Reunion was held at the Oyster Harbors Club on June 11 to 14. In point of attendance and enjoyment the affair exceeded all previous Class Reunions and proved a fitting celebration for twenty-fifth anniversary of graduation.

Although scheduled to begin the 11th, E. B. Bartlett was the first arrival, getting there on Wednesday afternoon, the 10th. Nine more arrived on the 11th, including the Coes, the Ginsburgs, the Kidders, Nugent Fallon, Bob Lyons, and Joe Santry.

On Thursday, the weather was not particularly good, so sports were confined to bridge with some croquet. In the evening the crowd gathered around the fire and chatted about old times. By Friday night the attendance was increased by 42, including the following couples: the Benhams, the Blackwells, the Coes, the Farleys, the Guernseys, the Kelleys, the Kendalls, the Pulmans, the Rosses, the Rowes, the A. C. Taylors, the Thites, the Newtons, the Terrells, the Fullers with their children, Marian and Robert, the Philbricks and their daughter Miss Annette, Sid Carr and his mother, R. S. Clark, H. E. Darling, E. T. Henius, H. E. Young and aviator, Mr. Duchon.

The weather man assisted the celebration by clearing the skies Friday morning which was a welcome relief after the preceding prolonged rainy spell. All facilities of the Club were enjoyed, including the golf course, bathing beach, and so on. The golf widows improved their time by touring around the Cape. In this case, some of the male non-golfers operated personally conducted tours. In the evening, the crowd enjoyed an exhibition of motion and still pictures put on under the auspices of Ned Rowe. The slides showed the Institute old and new, and the motion pictures included some Hawaiian reels brought on by Sid Carr and reels which Henry Ginsburg took on a recent trip to Europe.

Saturday, the last day, swelled the attendance by 29 more, bringing the total to 81 and breaking all previous records.



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The married couples appearing were: the W. G. Abbotts, the Carters, the R. S. Clarkes, the Griffins, the Patches, the A. B. Shermans; also, the Wetterers with their son Charles, Carroll Farwell and daughter, Helen Hosmer and her niece, Miss Mary Hosmer, Andy Kerr, Charlie Kasson, Bob Pinkham, T. L. Hinckley, and Charlie Burleigh. Mr. and Mrs. Wells and three sons dropped in for luncheon Saturday noon. Wells' oldest son has his Master's Degree from Technology; a reflection upon our ability as a news gatherer as we have previously commented on the fact that we knew of no '06 men who had sons at the Institute. The day was devoted to the class golf tournament, obstacle golf, and further investigation into the attractions of Cape Cod and Oyster Harbors.

The final banquet was held Saturday night. In view of the fact that some were obliged to leave, the attendance at the banquet was reduced to 65. The party was enlivened by the use of the Hawaiian lei, kindly donated by the Technology Club of Hawaii and brought to the Reunion by Sid Carr. The demonstration of the lei as used in Hawaii led by Sid Carr with Miss Annette Philbrick as the leading lady was enjoyed by all.

At the conclusion of the dinner the prizes were awarded as follows: Coming the longest distance, Sid Carr from Honolulu; second longest, Bob Clark from San Francisco. *Men's Golf*: First Gross, F. A. Benham; Second Gross, Bob Lyons; First Net, H. R. Philbrick; Kickers Handicap, O. B. Blackwell; Highest Gross, F. M. Fuller. *Ladies' Golf*: First Net, Mrs. Philbrick; Second Net, Mrs. Taylor. *Obstacle Golf*: Men's, Tie between Charlie Burleigh and Henry Ginsburg; Ladies', Miss Annette Philbrick; Children, Master Robert Fuller.

After dinner, dancing was enjoyed, followed by singing and it was early Sunday morning before the festivities were over. The party disbanded after breakfast Sunday morning, although some stayed to enjoy a few more hours at Oyster Harbors and to try the golf course again. On leaving, all agreed that it had been the most successful Reunion ever.

For the first time a Class member flew to a reunion. Cy Young came from Minneapolis by plane. On his way he stopped off at Atlantic City for the N. E. L. A. Convention. He hoped to make Oyster Harbors by Thursday night, got as far as Pawtucket but was prevented from completing the journey on account of the weather. He arrived Friday morning piloted by Mr. Duchon. Mrs. Fuller and the two children made a flight in Cy's plane. This was not surprising as the Fullers have been "air minded" for some time.

The Class of '91 held a reunion at East Bay Lodge at the same time as our outing. While touring the Cape some of our Class called on '91. Several carloads of that Class returned our call Sunday morning. They were received by the remaining members of '06 including some of the ladies whose husbands were still struggling with the golf course. Referring to

golf, the tough Oyster Harbors course proved too much for most of the players. The 16 cards turned in for the medal play tournament showed scores ranging from 102 to 155, with an average of about 122. The lucky number in the kickers handicap was 75. Sid Carr and Otto Blackwell each had this net figure, but Otto's name was drawn by the Club "Pro," Roy Brondson.

It was an innovation to have the mother of one of the Class present. We were very glad that Mrs. Carr could come and her presence was a distinct addition to the whole affair, particularly the final banquet. These notes are being written at home with the pen and pencil set which classmates presented the Secretary at the banquet through the medium of Harold Coes as official spokesman. The bouquet of flowers presented Mrs. Kidder at the same time was much appreciated.

We were fortunate in having one of the lady members of the Class present, notwithstanding the absence of Eleanor Manning. Helen Hosmer did the honors for the co-eds this time. We appreciated her coming and also bringing her attractive guest.

Henry Ginsburg did a Luther Burbank and produced a patent leather red and gray flower which was worn by the ladies. The men were given red and gray ties which were the best that Henry has produced to date.

The success of the Twenty-Fifth Reunion was due to the combined efforts of several members of the Class. Charlie Wetterer's work in getting out the first announcement started the ball rolling. Ned Rowe did yeoman service in sending the second letter and arranging for the exhibits and motion and still pictures. As usual, Henry Ginsburg arranged for the souvenirs, and so on. Ralph Clarke and Henry Ginsburg acted as official photographers with their movie cameras. Ralph's pictures have already been seen by the secretaries and are very satisfactory. It is hoped to arrange an opportunity for classmates in the Boston vicinity to see them this coming winter.

Our last notes referred to the marriage of Miss Eleanor Manning. Miss Manning was married to Johnson O'Connor of Boston early in June and sailed for Europe on June 13 to spend two months motoring. Mr. O'Connor is associated with the General Electric Company as a personnel expert, and is well known for his original work along vocational aptitude lines.

Shortly after the Reunion it was announced that Cy Young had been promoted from Sales Manager to the office of Vice-President in charge of sales of the Northern States Power Company. The following notice concerning him was submitted by Charlie Wetterer: "Mr. Young has had a distinguished career in business since his graduation at Lincoln Academy, Bristol, Maine, and from Technology with a B.S. degree. He has held a number of important engineering positions and made two tours of the world investigating electric rates, ordinances

and street railway matters as an official of the U. S. Coast and Geodetic Survey, Washington, D. C. He has been, successively, manager of power sales, sales manager, and general sales manager of the Northern States Power Company, until his recent advancement to the position of Vice-President in charge of sales. — Mr. Young occupies a position of high standing in various activities of the electrical industry in America."

Word has been received of the death of James L. Ackerson. Ackerson was one of the Annapolis men, getting his degree with Course XIII-A. Since leaving the Institute he had spent most of his time in the Navy, although during the war he was identified with the Emergency Fleet Corporation and later had been connected with some private corporations. — JAMES W. KIDDER, *Secretary*, Room 505, 261 Franklin Street, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

### 1907

The Secretary regrets that owing to lack of news items, there are no notes for this issue. He urges the Class to cooperate with him by sending in any news of interest. — BRYANT NICHOLS, *Secretary*, 19 Rowe Street, Auburndale, Mass. HAROLD S. WILSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

### 1908

Don't forget the first get-together dinner of the 1931-32 season will be held on Tuesday, November 10, at 6:30 P.M., Walker Memorial, M. I. T., Cambridge, Mass. Plans for our Twenty-Fifth Reunion will be discussed; and there will be some interesting movies, too.

Win Ford sends his greetings to the boys and gives his address: Veterans' Hospital, Fort Lyon, Colo., where he has been since last Christmas. — The address of Major John H. Caton, 3d, is c/o American Consulate, Buenos Aires, Argentine Republic, S. A. — HAROLD L. CARTER, *Secretary*, 185 Franklin Street, Boston, Mass.

### 1910

A few letters are drifting in to keep the 1910 notes from going entirely dead. Perhaps after The Review comes out it will stimulate more men to write to the Secretary. The following letter came from Sam Cohen: "Years have come and gone since we used to meet on Rogers' steps and cheer our hearts with song, and my memory of those stirring events has become very hazy. However, the joy of bumping into you, on a cold December day in 1917, in the cold and dreary barracks at Gondrecourt, is still fresh in my mind. The temperature there rose rapidly when we got you a-going on Kipling's harassing adventures in poetry.

"I'll have to write a book on my adventures in the East, West, South, Panama, and France. I have been in the structural engineering game without a let-up since graduation, but I have never found times as bad as they are now. Next week

## 1910 Continued

I will be looking for something to do and I don't know how to do it. Selling apples seems to be an honest way of making a living if the apples are good. Do you know of anything better? Am 43, but look like 30, and feel like 21."

Foster Cole writes: "Nothing of particular interest to report. Am still with the New England Tel. and Tel. Company and will be glad to see any of the boys if they care to drop in."

Jack Babcock clipped an article from "Roads and Streets" by Holman Pearl, in which Holman describes a little stunt of his of pushing some 36-inch pipe under a concrete state highway without cutting the surface of the highway or holding up traffic. Probably Holman could get a pipe cleaner through the stem of that old curved pipe of mine that's gone flooeey, but at any rate he seems to have done quite a stunt in Crosby, Minn. I wish there were space for the whole article, but I can only quote a paragraph: "Jack-ing three lines of 36-inch, corrugated-iron pipe conduits for as many sanitary sewer lines through soil varying from sandy loam to both dry and saturated quicksand, under a main trunk highway within its city limits, was the means taken by Crosby, Minn., to assure the convenience of its citizens and of the users of the highway."

"Crosby is a progressive city of 3,500 population, situated in Crow Wing County in the midst of the iron mining country of Minnesota. Passing through Crosby is State Trunk Highway 2, the main highway westward across the state from Duluth, Minn., to Fargo, N. D. . ."

The Newburyport News had a long article on an address given by Ralph Bartlett before the Rotary Club on gold mining in Alaska. He told them all about the mining operations as well as describing the climate and living conditions. — DUDLEY CLAPP, Secretary, 40 Water Street, East Cambridge, Mass.

## 1911

Add another Junior '11 man — David Ladd Young, son of Mr. and Mrs. Erving M. Young of Arlington, N. J. Wife and son are doing nicely, reports Erv, and he adds that he saw Ike Hausman, I, in New York recently. — Among our early September guests at Douglas Inn were S. B. Dyer, II, and his wife, and Dave McGrath, Assistant Secretary of the Class of '12, and his wife and two youngsters.

Ban Hill, I, along with W. Watters Pagon '07 has been named by Mayor Jackson of Baltimore to study the municipal airport project there. Hill was harbor engineer in Baltimore under two administrations and has made previous studies of airports and airport sites. — At the recent testimonial dinner to John R. Freeman '76 at Providence, Chet Morey, II, was among those extending formal greetings as President of the Providence Engineering Society, sponsors of the affair. Morell Mackenzie, II, and O. W. Stewart, I, were other '11 men present.

Dick Ranger, VIII, has made another enviable name for himself as a result of his latest invention — an electrical organ

in which loudspeakers take the place of pipes and from which it is possible to broadcast without microphones. The console is located in Dick's living room in Newark, N. J., and 13 loudspeakers replace the organ pipes. Amplifiers, generators, and other devices are installed in a garage behind the house, all connected by wires. The organ has a range from 16 to 8,000 cycles, and operates on 250 volts, having 150 tubes and 50,000 circuits. In a recent copyrighted story in the Cincinnati Times-Star Dick was referred to as "41 years old, slight in stature, sandy-haired — a scientist-mystic who stands at that gateway left open by Einstein, where lie immensities beyond the test tube."

Ted Van Tassel has effected a reorganization of his leather company, the Van Tassel Leather Products, Inc., having acquired the plant and assets of the Van Tassel Sole and Leather Corporation. Ted is again President of the company and among his directorate we find Dr. Willard E. Freeland, professor of marketing at Technology. In the new tanning process Ted has originated, after 20 years experience in the tanning industry here and abroad, the time required by the old tanning process, usually taking from 120 to 180 days, has been reduced to a short period of 12 days and at the same time the wearing quality of the product has been improved 50%. The Norwich Bulletin, commenting on the reorganization, said: "The community is fortunate in having this industry among its present list, and such a personnel made up of some of the foremost men in their respective fields assures this company of success."

Once again your scribe is planning to spend the winter up at Douglas Hill, this time with his wife and three youngsters remaining, too. Since the big Reunion there has been sort of a lethargy of letter writing by classmates, so it's time for the old slogan again: "Write to Dennie!" — ORVILLE B. DENISON, Secretary, Douglas Inn, Douglas Hill, Maine. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford, Mass.

## 1912

Before long we expect to send to all members of the Class, a data sheet on which each will be asked to express his preference and ideas with regard to our Twenty-Year Reunion, as to location, date, and lots of other details. We hope everybody will take the very slight trouble to answer the questions. The success of this event will depend more upon your coöperation and interest than upon any efforts of a Reunion Committee.

A few weeks ago, we were at Niagara Falls, N. Y., on a business trip, and in the evening we enjoyed the delightful hospitality of Mr. and Mrs. Lester M. White. White is with the Roessler and Hasslacher Chemical Company at Niagara, having been transferred from Perth Amboy, N. J., about a year ago.

We take pleasure in publishing in almost its entirety, a long letter received from C. B. Vaughan, II. His travels and experience make such interesting reading,

that we simply couldn't cut it down." "From the time of graduation until the War," he writes, "I had a knock-out experience; car work on the 'board' for a railroad company; field work on an appraisal inventory; a short time with the National Guard 'on the border'; and then some selling work for a railway supply company. The War brought an Officers' Training Camp with its attendant, last-minute outbreak of some epidemic to prevent going overseas with one's unit; lost in France for some time and finally a course in one school after another with no commission forthcoming until the last moment, and then on the way to the front on the day of the Armistice. But the States were reached shortly afterward. A few months' vacation brought a chance to go to Italy for a firm which was expecting to 'do wonders' in revolutionizing hydro-electric power development there. This lasted less than a year but if anyone has lived in Italy and knows their Naples and Rome, they know that this was very much worth while even though it did not bring any extensive financial benefits."

"Shortly after my return, I got in contact with our old friend, Dave Dasso, II, who suggested that I come down to Peru and act as his assistant in the importing business which he was managing there. This I did in 1920 and remained for 5 years. As anyone who knew him in the Institute will remember, he was a good engineer and there did not seem to be much which he couldn't do in the way of making balky cars perform, bring a Diesel out of a cold funk, or make a badly designed glass works turn out good bottles. Lima proved a delightful place to live, with its historic surroundings and agreeable foreign colony, to say nothing of the very aristocratic Peruvians themselves. Fortunately, I was there when Peru was in its hey-day and enjoyed two 'Centenarios.' If anything could have been done on a more lavish scale than these, I fail to know of it. At first one is a bit palled by Lima's eight months in a year without sun but it is made up for by the four months of sunshine which follow. About the end of 1925, business conditions became rather bad and Dave and I parted company. I understand that Dave is still getting along very nicely there and is very highly thought of, both by the Peruvians and all foreigners."

"Early in 1926, I cast my lot with General Motors Export Company and for five years enjoyed roaming around Venezuela, Colombia, and Ecuador. Travels in these countries, even if not too far from the beaten track, bring experiences that are practically impossible to put on paper and have to be actually gone through, to be appreciated."

"Upon my return to the States for my first vacation, a short business trip to Porto Rico decided me that it would be a good idea to have someone along to enjoy these countries with, and Gladys Walker of West Haven, Conn., who had experienced some of the lure of the tropics, on 'dude tourist' cruises in the Caribbean, felt she could stand some more of



1912 Continued

the lure. So we started our honeymoon in 1929 by a trip to Buenaventura, Colombia. That may not mean much to most people, but be it enough said that Buenaventura is one of the few spots which even the U. S. Foreign Service considers so bad that one gets a year and a half credit for one year spent there. The bride had been well prepared for the 'beauties' which might be encountered but I am afraid Buenaventura was a bit beyond her fondest expectations. However, this was a good start and the rest seemed rather good in comparison.

"Traveling on the Magdalena River boats is famous; everyone, foreigners included, have their pillows and sheets done up in a yellow, native straw mat and if one wants to eat, a box of edibles goes along likewise. This is another one of those things which can well wear the motto 'in all the world, no trip like this.' We did not fail to have our bit of mule-back riding for which Colombia used to be famous and still is when the rains wash the auto roads away; but this is not to be compared with the delights of swinging for five hours locked up in a 'monkey cage' on an aerial ropeway, at four miles an hour up hill and down dale; in some cases half a mile between towers and nearly that much to the ground. Ecuador is quite incomparable with the native fairs at Riobamba, half way up to Quito. The natives still cling to their old brilliantly colored costumes; with Quito, probably the quaintest of all South American cities, coupled with a delightful climate and most beautiful surroundings. One is a bit surprised to find such a wonderful automobile highway connecting Riobamba and Quito, a distance of about 150 miles. While travel such as one experiences in these countries has its inconveniences, it is more than made up for by the pleasures one can get out of it all; one's feet soon itch to hit the trail again after a short visit to the States.

"Business depression in South America brought us back the middle of June, and we are now looking forward to a hard winter. Wish we were going back." Vaughan's address for the time being is 455 West 34th Street, New York City.

Nearly every newspaper one picks up has something to say regarding Commander Hunsaker, Vice-President of the Goodyear Zeppelin Corporation, in charge of passenger airship development. Hunsaker was also in charge of building the Shenandoah, the first modern non-rigid airship, and the N-C flying boats. — Also mentioned in the aviation news is Cy Springall of Malden, who has been named the architect for the new hangar for the Twenty-Sixth Division Aviation Unit of the Massachusetts National Guard. — FREDERICK J. SHEPARD, Jr., Secretary, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, Assistant Secretary, McGraw-Hill Publishing Company, Inc., 10th Avenue and 36th Street, New York, N. Y.

## 1914

A recent news dispatch tells us that Arthur R. Losh has been elected City Manager of Oklahoma City, Okla. Not

only is this a real executive position, but with the oil situation in Oklahoma, it is a real he-man's job. Losh has had considerable experience with municipal, state, and government bureaus. Since 1929 he has been the highway engineer for the State of Oklahoma and has been responsible for the carrying out of the extensive road building program.

Ross Dickson has sent in a clipping from the Book Review section of the New York *Herald-Tribune*. The book in question is entitled "A Story of Flapper Failure" and bears the name of "Village Virgin." It is written by none other than Dean Fales. We have received some interesting letters during the past summer while Dean was vacationing at Kennebunk Beach, Maine, but we never quite accused him of writing a book of this sort, although it would not be a difficult stretch of the imagination to believe it true. Your Secretary will appoint a representative committee from the class to investigate Dean and see if this is his book or whether someone has been using his name. If this be Dean's book, a special report will be issued, which we have every reason to believe the Editors of the Review will fail to publish.

Patent No. 1, 823,739 with 13 claims has just been issued to J. W. Horton, covering "A System Operating on a Marginal Current Basis." From what we have heard of marginal operations during the past two years, we do not question the propriety of granting 13 claims in such a patent. — After having wandered over nearly the entire United States and parts of Canada inspecting for the Factory Mutual Insurance Companies, Hal Ambler is now located in Boston and has been covering Massachusetts properties. Those of you who think you run up miles on your speedometer just want to take a look at Ambler's record on some of these inspection trips.

Following our Ten-Year Reunion we frequently heard repeated the expression "duty must be done." We now have "justice has been done." We have seen Jimmie Judge slip several times, but he has always managed to come out on top until just recently. In some strange manner he stubbed his foot and broke his toe. While, of course, we extend sympathy to Jim, we can see most of the Class rising for one broad grin. — HAROLD B. RICHMOND, Secretary, 30 Swan Road, Winchester, Mass. GEORGE K. PERLEY, Assistant Secretary, 21 Vista Way, Port Washington, N. Y.

## 1915

All hail the Kokomo Flash! Weare Howlett, X, and Mrs. Howlett are the proud parents of Joan Frances, eight and a half pounds, born August 29, 1931, in Boston. Journalistically speaking, as these notes go to press, Mrs. Howlett, Weare, and the baby are all doing well. To them go the sincerest wishes of our Class. To retaliate for my allegations in the May, 1931, Review, Weare writes: "Don't forget to credit me for class dues paid you at the dinner. It was kind of depressing to see you handle the class

money in one hand and dice in the other. What a man! Well, we had a wonderful time in spite of it all."

From our mailing list of 422, we have received 118 class dues, or about 28%. This is slightly better than two years ago, for which I thank all you subscribers. Here follows some of the many interesting letters received with checks. Other letters will be in the next issues. Here's another long distance prize from Oliver G. Norton, II, Neuilly, France:

"I am not much of a hand at writing personal letters, particularly when it is a question of longhand as the stenos. only take dictation in French. Best personal regards and good luck in the campaign for class dues." — From Jim Tobey, IX, whom I saw recently in New York as active as ever in his job of Director, Health Service, The Borden Company: "In accordance with your touching letter, I am enclosing check for \$2.00 dues. Recently S. L. Willis dropped in to pay a call. He is now living in White Plains, N. Y. I also see Arthur Mudge occasionally as he is living in Mamaroneck, N. Y., and does considerable business with my concern, The Borden Company."

Andy Anderson, I, the "sand hog" sent in the following: "You ask also for a letter with some news of myself. Luckily I am still among the employed during the present depression. Still with Patrick McGovern, Inc., on the construction of City Tunnel No. 2, a water supply tunnel for the City of New York. Keeping busy and the work is progressing according to schedule. Remember me to everybody."

— Phil Alger, VI, a real electrical engineer with the G.E. at Schenectady writes: "Best regards — maybe I'll write some day — at least I hope to!" — George Urquhart, X, one of the receivers for the Manville-Jenckes Company, Pawtucket, R. I., writes the following: "Hope you will be able to balance your budget this year. If you are in this part of the country at any time, I would like very much to have you stop in to see me."

Here follows something really funny from old Guernsey Palmer, II, and is typical of him. Those who recall him at our Tenth Reunion will appreciate his pass at Gabe, for Guernsey was one of our highest spirits, of which, incidentally, he consumed a great deal. We'll have a whole case for him at our Twentieth. "Your general letter of March 16 reminding us of depletion of treasury funds also reminds me of last summer's reunion and how lucky you birds are who are located up there in the East where you can get together frequently, notwithstanding that you now and then must encounter blizzards and nor'easters to do so, while this country is enjoying sunshine and roses. The remittance is gladly enclosed and I hope that by 1935 the fund accumulates to the necessary amount and that Gabe Hilton may again be induced to show up at the reunion with his excess baggage. We should like Gabe to bring Mrs. Hilton, but if he must leave one or the other at home, we prefer the excess baggage. Best wishes to all of the gang including yourself."



1915 Continued

Wives are not only interested in Class affairs, but also the welfare of the Secretary. See how kindly Kebe Toabe's wife writes. Thanks very much, Mrs. Toabe, I am looking forward to the pleasure of meeting you and the two future engineers. "Kebe has asked me to answer your letter, so enclosed please find check as per your request. The next time you come to New York we would very much like to have you spend a week-end with us. Kebe wants you to see our two boys, perhaps future Technology men. If you let us know in advance, I can perhaps manage to have some of the other boys over, hence having Technology night at our home. Let us hear from you."

It is strange that you fellows do not respond to my monthly pleas for help, but you come across voluminously when I extort two dollars from you. Maybe Eddie Fonseca, VI, is right about making this a racket. Thanks for the idea, Eddie, but if you and the other reluctant writers in the Class would loosen up a bit, these notes could be a book of knowledge instead of your ironical book of numbers. Mrs. Fonseca should learn his storytelling proclivities! What trusting wives! Memories of Marblehead and Eddie, and I'm laughing again. Here it is: "I am enclosing check for \$2.00, which I believe is the amount asked for to replenish the class funds. (Confidentially I think you could have asked for more, thereby creating a new and rather unusual racket.) Your request for a letter for publication in *The Review* ought to bear some fruit. Believe me when I say that our class news is about as interesting, of late, as the telephone directory and differs from it only in volume. I had hoped to see you in New York on one of your visits here, but your telephone call ended the argument. Don't forget to get in touch with me when you are next down this way. Incidentally the reputation that you have given me as 'an after dinner speaker?' in *The Review* required some explanation on my part to the mother of my children, so let that be a lesson to you."

You others who have written me, don't be impatient. Your letters will appear in an early issue. — AZEL W. MACK, Secretary, 379 Marlboro Street, Boston, Mass.

## 1917

A dinner was given in honor of Dr. Karl T. Compton at the Buffalo University Club on September 1, when Dr. Compton was in the city to preside at an important American Chemical Society symposium. During the dinner, each Technology man present was asked to rise and state his class, course, and present condition of servitude. As usual, '17 was well represented. We heard from C. C. Coakley, L. M. Lauer, R. A. Pouchain, E. H. Heath, J. L. Parsons, J. C. Whetzel, B. F. Dodge, Ray Stevens, J. B. Dickson, and Bill Ross. Ross had the distinction of having been taught by Dr. Compton during his first year as a teacher of chemistry. Heath is now a doctor of medicine practicing on unsuspecting Buffalonians. — Pouchain is a chemist in the bread

business in Philadelphia, and Coakley and Lauer are with National Aniline in Buffalo. — Dickson is with A. G. Spalding, Parsons at Hammermill Paper Company, and Professor Dodge is a leading scientific light on the Yale faculty. — Whetzel is in charge of research for American Sheet and Tin Plate at Pittsburgh.

A clipping from a St. Johnsbury, Vt., paper is authority for the statement that Harry Arthur Wansker was recently married to Miss Verda Marie Spear at Newtonville, Mass. The bridal couple left for an extended tour through Canada and the Canadian Rockies with return stop-overs at various points in the states.

You have probably received a note from one Augustus P. Dunham, father of the famous Dunham twins and well and favorably known for other less important reasons. At the time arrangements were made for sending out the letter, the class funds were in such a state as to compare favorably with the exchequers of several European countries. Brick Dunham has handled them very conservatively and appeals have not been made simply for the sake of establishing dues when they were not necessary. It will probably again be a considerable time before any general call for checks will be necessary.

Now is the proper time to lay plans for the Fifteen-Year Reunion coming next June. Tentative reservations have already been made at the Corinthian Yacht Club for June 10, and although there is still time for alternative suggestions, the Corinthian has met with such approval from a number of men who are definitely planning to be there that very strong claims would have to be made to obtain consideration for other points. — RAYMOND S. STEVENS, Secretary, 30 Charles River Road, Cambridge, Mass.

## 1918

Just what moving day in China looks like, with or without floods, we do not know, but that young China is on the move becomes an observational phenomenon with the receipt of new addresses for Jeean Chang, Chun-yang Chen, Lee T. Chen, and Kivei L. Hsuck. Chun-yang has gone to Nanking to serve on the Construction Committee, whatever that is.

Mal Eales, that Sampson in the Temple of the American Tel. and Tel. Company, was drawn for jury service in Newark last summer. The Robertsons, Kennards, Fullers, Longleys, Gretchen, and Anna Eales had a miniature reunion. But poor old Mal got left out, yea the sheriff kept him out, for Mal impressed the lawyer for the defense as such an amiable soul that he served as number six of "twelve good men and true" who sat in judgment of a murder trial. But the lawyer for the defense made a mistake. Mal crossed his electrical engineering with the talents of "Number Seven" who was a furniture manufacturer, and we'll give you three guesses as to the verdict. Another thing that interested us was an item in the paper to the effect that the county treasurer found fault with the expense of feeding that jury.

Alan Sanger's wife and youngsters have been reported as seen in Harrison, well and in good spirits, from which may be deduced Alan's continued success. Also the Woodward baby that was so long anticipated is reported as more than worth waiting for.

Karl Ford got his picture in the Salem (Mass.) Evening News of August 7 as a result of his having been made technical advisor of the Glass Container Association for which he is to carry on consulting and research activities. The picture was a right snappy one, but it was necessary to look carefully in order to be sure whether the uniform was that of Ensign U.S.N. R. F. or that of the Technology iron battalion. Uniform or no uniform, Karl worked himself up from a research fellow with the Bureau of Standards to a place where he is recognized as an authority on food packing and sterilization.

Now that Henry Ford's young chemists have subjected a wheat grain to a temperature of 320° below zero in spite of which it sprouted in the spring, orange growers have decided that the demure Vitamin C hiding in orange juice is unharmed by freezing. So Henry Stevens has made another change in occupation, this time to the Exchange Orange Products Company, Ontario, Calif., for the purpose of freezing that sunkist juice so that it can be delivered on your back steps by the milk man.

For any 18'ers out of a job we suggest starting a little garden patch in the interests of Vitamin A. How would this be for a slogan? "Never place the accent on the bologna when it belongs on the spinach!"

For those who still go to bed at night without culling the Help Wanted ads in the evening edition, we suggest a modest check sent to Dr. Allan Winter Rowe, Secretary of the Advisory Council on Athletics. Two or three of the boys got together last spring to save 1918 from total depravity by a contribution, totaling \$10, which does its best to appear nonchalant between 1917's \$45.28 and 1919's \$50.00 — F. ALEXANDER MAGOUN, Secretary, Room 1-305, M. I. T., Cambridge, Mass. GRETCHEN PALMER, Assistant Secretary, The Thomas School, Wilson Road, Rowayton, Conn.

## 1920

Our illustrious and distinguished classmate, José Augusto Padilla of Comayagua, Honduras, was kind enough to send your Secretary several copies of the *Revista Ingenieria*, or Engineering Review of Honduras, in which I found several interesting looking articles over his signature. As I was unable to read Spanish or whatever it is they use for language in Honduras, I cannot tell you more about them. I can tell you that Padilla is President of the Engineers Association. The Class of '20 gives you a great big hand, José.

I apologize for omitting the following important item from last month's Review. I received word early last summer that Bink Carleton had become a proud father. Hugh Tenny-Carleton was born

1920 Continued

June 7. The Carletons reside at Elizabeth, N. J. Bink says that this is the first important event he has had to report in years, but I doubt it. In common with most of his classmates, he is altogether too modest and retiring.

An important wedding I have the privilege to announce is that of Dick Herczel to Miss Juanita Huckins, daughter of Mr. and Mrs. Harold I. Huckins of Chicago, on August 17. The Herczels sailed to Europe for their honeymoon. Dick is head of the firm of R. E. Herczel in Chicago. Mr. and Mrs. Herczel will be at home at 550 Surf Street, Chicago.

John Logan is with the Union Switch and Signal Company at Swissvale, Pa. — Herb Krantz may now be located at 177 Columbia Heights, Brooklyn, N. Y. — Heinie Haskell is running the Brunswick Worsted Mills, Inc., at Pawtucket. — Arthur Dopmeyer is with the U. S. Public Health Service in San Francisco.

All of the above items with the exception of those about Padilla and Carleton were received from indirect sources. Would it be asking too much of you to give your Secretary a little direct co-operation?

The following clever announcement came into The Review office a short while ago: (Not reprinted from the *Journal of Industrial and Engineering Chemistry*.) Contribution No. 5 from the Hitchcock Family — JOHN HITCHCOCK<sup>1, 2</sup>, \* by L. B. Hitchcock and E. M. Hitchcock, University, Virginia.

#### Summary

Identification of a new element in the Hitchcock Series is reported, having an atomic weight of 11 pounds 12 ounces (5530 gms.). Its properties, while resembling in general those of other members of the series previously reported, are unique. The discovery is believed by the authors to be of great importance.

#### Physical Properties

The weight was determined by the method of equal swings, but the value of 5.530 kg. has not been corrected to the weight in vacuo. Overall length before applying any correction 20.75 inches (52.71 cm.). Average temperature during observations was 98.6° F. (37° C.). Density approx. 0.99.

#### Chemical Properties

The specimen is distinctly hygroscopic and efflorescent, an anomalous phenomenon of great interest. Very reactive, frequently vigorously and spontaneously. Possesses characteristic color and taste. Is malleable, conductive, non-basic in character, and is expected to produce lines of customary length (on the author's faces).

Continued agitation appears to increase reaction rate rather than to induce crystallization. Insoluble in water even

after repeated experiments. The effect of alcohol is thus far unknown.

#### Discussion of Results

The principal author is reported to be doing nicely. Junior author doing as well as can be expected. The subject of this paper will lead to further work. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth St., Winchester, Mass.

#### 1921

Two engagements of interest head the news items this month and our congratulations and best wishes are in order. From the New York *Herald Tribune*: "Announcement has been made of the engagement of Miss Betty Beggs of Paterson, N. J., daughter of the late Mr. and Mrs. John E. Beggs, to James Rowland Hotchkin, son of Mr. and Mrs. William R. Hotchkin of Montclair, N. J. Miss Beggs attended Friends Academy, Locust Valley, L. I., and was graduated from Holton Arms, Washington, D. C. Mr. Hotchkin is President and Treasurer of the Palnut Company, Inc., of Irvington, N. J."

Says the *Bridgewater* (Mass.) *Independent*: "The engagement is announced of Miss Ruth M. Sutherland, daughter of Mrs. Eunice Sutherland of Barnstable, Mass., to Mr. Frederick Follett Olson, son of Mr. and Mrs. A. L. Olson of Roxbury. Miss Sutherland was graduated from the Household Arts Department of the Framingham Normal School in 1927 and is at present dietitian at the Hartford Public High School, Hartford, Conn. Mr. Olson is Methods Engineer with the Hood Rubber Company, Watertown, Mass."

Carl T. Leander is now divisional sales manager for The Dorr Company and is located at 333 North Michigan Avenue, Chicago, Ill. Carl has to say about himself: "As you know, I have been with The Dorr Company since 1922 and have been located here and there, the tendency being that I am going further west with each successive move. From 1927 through to 1929 I was in charge of our sales office in Toronto, Ontario, and beginning in 1930 I am handling our sales activities for the Middle West."

Joseph Lurie is with W. S. Libby and Company, Lewiston, Maine, engaged in research work in connection with the manufacturing of woolen and cotton blankets. — Kenneth H. Pratt, formerly at the Lynn Works of the General Electric Company, is at present engaged on special engineering problems, both physical and chemical, at the River Works of the same company. Ken was married in 1928. — Richard McKay has spent some time in India, South China, and the Philippines and has been twice around the world in his travels. Dick has most recently been studying finance and economics at the Harvard Graduate School of Business Administration and is now associated with E. A. Pierce and Company, 45 Milk Street, Boston, Mass. Dick reports further that he is still single and eligible.

Donald J. Swift is with the United Electric Light and Power Company, New York City, doing miscellaneous engineering work in connection with underground

transmission and distribution systems. Don, who pleads guilty to the charge of "single blessedness," makes his home at 100 West 55th Street, New York, N. Y. — Richard P. Windisch, whose address is 1435 Lexington Avenue, New York City, is now a partner of the firm of W. E. Burnet and Company, Stock Brokers, 11 Wall Street, New York, N. Y. Dick was married in 1927 and has a boy three years old. — Francis L. Blewer is still with Harris, Forbes and Company, 56 William Street, New York, N. Y. At home at 1185 Park Avenue are Patricia Power Blewer, born in 1928, and MacGregor Livingston Blewer, born in 1930.

Archie L. Mock calls himself a confirmed bachelor and then goes on to say: "I sold boilers for four and a half years for Walter S. Leland ('96) Company of Oakland, Calif., and then was with the Sharples Specialty Company of California in San Francisco and Seattle. Am now trying to get started for myself in the importing and exporting business at 686 Howard Street, San Francisco." We publicly express our appreciation of Archie's trick tire-changing stunts during our ride back to New York from the reunion last June. For his information, we have, despite the depression, been able to purchase a new jack! — RAYMOND M. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Co., South Manchester, Conn. CAROLE A. CLARK, *Assistant Secretary*, Bell Telephone Laboratories, Inc., 463 West Street, New York, N. Y.

#### 1923

The following quotations from a newsy letter from George Bricker will start things off: "On June 28, 1930, I was married — but then that was noted in the January Review, I believe. At any rate, Tom Rounds was my best man, and Lloyd Porter, II, and Ray Lehrer '24 were two of the ushers. Just two days later, Lloyd Porter was married in Port Washington, L. I., and Ray Lehrer and I were two of his ushers. There are now rumors to the effect that Tom Rounds will join the married ranks in the near future, the young lady in the case being Miss Marjorie Land of Yonkers, N. Y. I'm going to try to do as much to help Tom as he did for me last year. Incidentally, in passing I might mention that Al Pyle was a little previous in the remark he made when he sent in the item about my wedding last January in which Bondy says 'he (Al) says he's been hanging onto it for several months in the hope of having something to add to it.' However, on June 28 this year my wife presented me with a baby girl, and I can tell you that Miss Jacqueline seems to enjoy this world immensely."

"Since leaving New York a couple of years ago, I've been associated with two friends of mine in the field of Public Utility Consulting, operating under the name of O'Hare-Lewis at 201 Devonshire Street, Boston. We delve into problems of the Public Utility field which have to do with accounting, statistics, pensions, legislation, rate problems, and last but not least, appraisal work. Right in the

<sup>1</sup> Received September 19, 1931

<sup>2</sup> Published September 20, 1931

\* Presented before assembled doctors and nurses at the Martha Jefferson Hospital, Charlottesville, Va.



1923 Continued

next office to mine E. W. Willis holds forth in the sale of Central Station Switching equipment and what-not. Lem Tremaine comes up from New York every once in a while, and is sure he has the best insurance plan there is to be offered. Ted Kenyon lives directly back of me in West Newton. He is now chiefly interested in a comparatively new company of his for the development of various inventions. His main item now, I understand, is a device for measuring the speed of boats accurately, and he tells me that quite a number of his devices were used in the recent yacht races here, and abroad, too, I believe. I went to Camp Devens with the 301st (Reserve) Signal Battalion this summer, and who should be attached to the unit but Oscar Perkins. He is now located in Hartford, Conn., with the Connecticut Mutual or Connecticut General Insurance Company — I've forgotten which.

"That's all the class news I know of right now. Oh, yes, there is one other item — the fact that Tom Rounds is now with the Norman Hoffman Bearing Company in Stamford, Conn. He tries to convince the world in general and the Pennsylvania and other railroads in particular, that the bearings manufactured by the Norman Hoffman Company are better than those manufactured by his previous employer, the S. K. F. Industries.

"In my spare time (after working sometimes ten or twelve hours a day) I'm going to Northeastern Law School. My third year begins tomorrow night. It's very interesting and well worth while, but it sure ties you down on your time."

Pete warns that before long there will be a fall meeting of the New York Club of 1923 which has been inactive during the summer. For himself he reports that he enjoyed a two weeks' trip this summer stopping at Marblehead, Lake Winnepesaukee, N. H., Portland, Maine, and coming down the shore route to Chatham on Cape Cod. Pete further reports that in connection with the suggestion in a recent issue of *The Review* that possible plans for our Tenth Reunion be discussed, George Bricker springs one which we ought to think about.

Bricker points out that in 1933 a World Fair will be held in Chicago. Railroad fare to Chicago will probably be reduced at that time. Our Class President, Bob Shaw, is prominently identified with the commission in charge. Furthermore, Chicago is easily reached by fellows in the West, and many of the boys in Boston are anticipating attendance at the Fair. Bricker thinks that between Bob Shaw and the Chicago Technology Club we ought to be able to make excellent arrangements to draw a number of men from the Western, Southern, and Central states to the Reunion who would not otherwise be able to come if the Reunion were held in Boston.

Pete cites one objection to this proposal of Bricker's, which is that a Reunion in Chicago will prevent revisiting the Institute which some may wish to do. In favor of the suggestion he says that there

will be some very unusual and extensive displays at this Chicago Fair along modern engineering lines which would be of very great interest and that there would be plenty to do. Let us, therefore, have ideas from any of the rest of you regarding this proposal.

Samuel L. Williams, who is with the Westinghouse Air Brake Company, has been sent to the Pittsburgh plant of the company from New York where he has been one of their district engineers. — A clipping from the Taunton *Gazette* announces the engagement of Frederick S. Mann to Helen L. Benson of Taunton. Mann is with the New England Telephone and Telegraph Company in Boston. — Another clipping from the *Mercury* of New Bedford, his home town, tells of the engagement of Dale E. Washburn to Eleanor Neil of Everett. — Dan Sayre, Professor of Aeronautics at the Institute, according to the Claremont (N. H.) *Eagle*, is engaged to Rosamond Foster of that city.

I have a card from Maxwell B. Donald saying briefly that he has just joined London University to teach chemical engineering. He refers me to the August 21 issue of the *Journal of the Chemical Industry* for further particulars. If I was a good secretary, I would have by now looked up the reference, but the inflexible deadline of *The Review's* printing schedule brooks no further delay, and as I'm writing these notes at Erie, Pa., I haven't a reference library handy, so those of you to whom the *Journal* is conveniently available will have to look it up yourself. — HORATIO L. BOND, *Secretary*, 31 Concord Avenue, Cambridge, Mass. JAMES A. PENNYPACKER, *Assistant Secretary*, Room 661, 11 Broadway, New York, N. Y.

## 1924

On September 3, Francis W. Brown, V, was married to Miss Sara Lucile St. John in Dayton, Ohio. Brown is instructor in chemistry at the Drexel Institute, Philadelphia, Pa., and is now at home at 209 North 35th Street, Philadelphia. — And back in July, on the 6th to be precise, Charles B. Ford was married to Miss Edna Helen Haubenreich of Brooklyn, N. Y. Ford has now settled down at 470 Jefferson Avenue, Elizabeth, N. J. He is a chemist for Johns-Mansville Corporation. — During the summer in Walpole, N. H., Edward S. Taylor was married to Miss Constance M. Rathbone of Palmer, Mass. Taylor is now an assistant professor of aeronautics at the Institute.

From Jack Walthall, I received this: "A ten-word message can't convey one-tenth of what we'd like to say, about the luck that's come our way, we'll have to write you later." And inside the card there is the announcement of the arrival of Patricia Walthall on May 6, weighing five pounds, eight ounces. I certainly offer my congratulations and hope to get the letter so I can tell you more about Jack and his family.

The last we knew of Bill Peirce was when he was in Philadelphia as President of Peirce-Phelps, Inc., distributors of Majestic Radios. Now we find he has

moved to Chicago, having been appointed assistant to Don M. Compton, Vice-President and General Manager of Grigsby-Grunow Company, manufacturers of the Majestic products.

And to close up this month, I have a couple of notes about men who took graduate degrees with us in 1924. Professor Robert Bruce Lindsay, who may be remembered by many as an instructor in physics in our early years and who is now associate professor of theoretical physics at Brown, has been elected a fellow in the American Academy of Arts and Sciences. — A clipping respecting Major James Doolittle, who recently made such a phenomenal record across the continent, reminds me that this distinguished pilot took a graduate degree with our Class. — HAROLD G. DONOVAN, *General Secretary*, 372 West Preston Street, Hartford, Conn.

## 1926

Fall is no less vernal than spring in the Class of 1926. In consequence madrigals should be sung throughout the ranks of the Class to celebrate the following:

*Engagements:* Miss Lucia Frances Turner to George Edward Faithful.

*Marriages:* George Hannauer, Jr., to Miss Catherine Christley in Butler, Pa., on August 31. — Irving A. Cowperthwaite to Miss Fae Irene Poore in Boston, in June. — James Andrew Drain to Miss Barbara Jane Atwater in Lake Forest, Ill., September 5. — Colin Wyland Reith to Miss Marjorie Edith Chapple, in Billings, Mont., June 27. — Watt Hamilton on October 17.

*Births:* A son, William Frank, to Mr. and Mrs. Frank W. Gratz, August 13. — A daughter to Mr. and Mrs. John Wills, September 12. — A son, Carleton Stillman, to Mr. and Mrs. Carleton Everett, June 13. — A son, Frederick Ernest, to Mr. and Mrs. Theodore A. Mangelsdorf.

From the Worcester *Post* we culled the following item: "Miss Mary O. Soroka, who designs her own clothes, is the first woman to receive a certificate as a civil engineer from the New York State authorities."

The following letter was received by the Secretary from Newell E. Watts, 2d Lt. Inf. (DOL) ADC, Press Relations Officer: "Here is something which may be of interest to the classes concerned. At the Annual Charity Horseshow sponsored by the Army Reserve Officers of San Diego, Calif., former Technology men were two in number as entries and topped one first and two fourth prizes. This makes exactly two more places than were won by representatives of any other school or college. The two Technology men who were entered were: William W. Scripps, VI, 2d Lt. CAC-Reserve, U.S.A., and Newell E. Watts, X, '25, Regular Army. Scripps walked off with a first in the musical chairs (Class 5) and a fourth in the potato race (Class 7). I was lucky enough to cop a fourth in Class 1, the three-gaited saddle horses."

Arthur J. Riley was ordained to the priesthood on June 5. — J. RHYNE KILLIAN, JR., *General Secretary*, Room 11-203, M. I. T., Cambridge, Mass.



## 1928

Writing class notes ought to be good training for the writing of a society column in a large metropolitan daily paper. It's just one marriage right after another, and I suppose that about the time I finish up the list of first marriages there will be a lot of news of ex-husbands off on a second trip. On the top of my file of news notes is a handsome wedding picture of Mr. and Mrs. Harry Folsom Cade, Jr., after their recent marriage at the Old Ship Church, famous edifice of Hingham, Mass. Mrs. Cade was formerly Miss Nettie Burr Davis of Hingham. — The news of Sabin-Ekwall marriage comes next on my list. Don Sabin and his bride, the former Miss Alice Ekwall, were married at the Church of the Good Shepherd in Watertown. They are now living on Withington Road, Newtonville, Mass.

A. Fitch Briggs, VI-A, was married on April 5 to Miss Dorothy Smith, daughter of Mr. and Mrs. Robert Ewing Smith of Beaumont, Texas. Fitch's bride is a graduate of Ward-Belmont College of Nashville, Tenn., and the University of Texas. Fitch is now working as a distribution engineer for the Gulf States Utilities Company and is living at 2370 Laurel Avenue, Beaumont, Texas. Don't forget the address when in the Lone Star State as Fitch will be delighted to see any '28 men. — Formally also, must we record the marriage of Mortimer Cook Budlong to Miss Alice Jane Mulder of Chicago. The young couple took their wedding trip in Mexico and then returned to La Salle, Ill., where they are living. Mort is now with the Western Clock Company.

The next clipping is quite sensational for it has a two column flyer headline which says "Girl Makes 12,000 Mile Trip to Wed Medford Boy." — "Robert W. Carder, Medford High 1924 and former Cardon Road resident, was married at Singapore, Straits Settlements, East Indies, to Miss Ruth E. Kelius of Philadelphia. Carder is with the Standard Oil Company in East Indies and will remain there for three years." That's real modern romance! Bob is now working as assistant director of the research department in the Palambang Refinery in Sumatra Dutch East Indies. We extend our congratulations and sincere best wishes to Bob and Ruth in far off Sumatra! — Another recent marriage was that of Robert S. Woodbury to Miss Helen L. Spring of Newton Center, Mass., on September 15. Miss Spring is a graduate of Vassar in the Class of 1928.

Out in Portland last year Ion H. Lewis created a traveling fellowship for a ten-month tour of Europe for young men who were deserving students. The first award of this fellowship was granted to our Course IV friend, Linn Forrest, and he is planning to pay particular attention to a study of the development of modern architecture in Sweden and Germany. That's a great break and we are glad Linn won the prize.

The New York Times recently announced the marriage of Frank Webster and Miss Helen S. Talbot of Englewood,

N. J. Most of the wedding party was made up of Boston young people. No present address was mentioned by this announcement. — The wedding of Miss Ruth E. Pfingst and Harold F. Lathrop took place recently at the bride's home in Louisville. The young couple are now at home at 3121 Hoagland Avenue, Fort Wayne, Ind. If you are broke and in Fort Wayne, remember the address. — By joining hands and repeating the marriage vows in accordance with the old Quaker custom, Lincoln Gifford and Miss Ruth Douglas recently were married, the ceremony taking place in the Friends' Church at South Durham, Maine. Lincoln is now working in the research department of the Illinois Zinc Company of Peru, Ind., where the couple now live.

Our old classmate, M. P. Kanga is now with the Tata Iron and Steel Company in India where he is engaged in cutting down coal costs. The Tata Steel Company is the largest in the British Empire. His address is 10 B Road Jamshedpur, Tatanagar (B. N. Ry.), India.

My short trip to Europe proved very interesting. Bill Carlisle and I decided some months ago on the expedition and sailed on the *Britannic* (Diesel ship) from Boston, August 30. We landed at Liverpool, motored down through the famous old English countryside, stopping at Chester, Stratford-on-Avon, and Oxford College en route to London. We spent several days there seeing the sights as well as short trips to Windsor Castle, Eaton College, Runny Mede, and Stoke Poges. We crossed the Channel by boat in perfect weather, went to Paris for four days. I left Bill in Paris. He returned on the *Westernland* while I took the Imperial Airways new 38-passenger four-motored plane for London, only to be forced down at Lyme, England, in the fog and had to flag a train for London. From London I went to Edinburgh for some sightseeing, then down to Liverpool for a few days' visit at Port Sunlight, the giant home plant of Lever Brothers, Ltd. From Liverpool I returned to London and Southampton where I boarded the tender with James Walker, Esq., to meet the *Bremen* and return to New York. Altogether it was a wow of a vacation. — GEORGE I. CHATFIELD, *General Secretary*, 420 Memorial Drive, Cambridge, Mass.

## COURSE I

In the line of vital statistics, it's a pleasure to report the birth of a baby boy, Donald Holman, to Mr. and Mrs. Leon P. Gaucher, on August 2. Gaucher is still in Port Arthur, Texas, indicating that he is with the Texas Company. — A letter from Ken Clark adds another to the list of those who strongly recommend married life. Ken is looking forward, I believe, to quite an extended job with the Chicago Sanitary District as the program of construction on which he is working calls for an expenditure of twenty million dollars a year for eight years. Clark's address is 5633 Kenmore Ave., Chicago, Ill.

George Mangurian spent his vacation largely in visiting airplane factories throughout the East, and found his in-

spection of the Keystone, Pitcairn and other factories extremely interesting. One week-end he spent in Washington with Ed Holmes. Ed is hard at work for the Bureau of Public Roads. This job has taken him into several sections of the country at various times in the last two years, including New York, Wisconsin, Massachusetts, the Carolinas, and now Washington, with another transfer expected soon. George had a little time out after his vacation while Chance Vought completely reorganized its engineering staff, but is now back at work in Hartford. Address him c/o Chance Vought Corporation, East Hartford, Conn.

The Electric Bond and Share Company has put most of us on part-time and that circumstance has enabled me to visit Boston during the past week, and incidentally to pick up a few items of news. I spent one evening with Bill Kirk. As we've reported before, he is working for Lee Higginson in Boston after completing his course at the Harvard Business School. Bill's job requires that he keep track of industries of a certain classification and then make reports on their financial condition to the heads of his company. He finds the work intensely interesting and is enjoying it enormously. He is naturally a "stock market bug," able to quote the closing price of any stock right to the nearest eighth point. From Bill we learned that Joe Guertin is working for one of the contractors on the new buildings at Harvard; that Tallman is working for the Massachusetts State Highway Commission, at present in Andover; and that Harbeck, after working for the Milwaukee Traction Company, has switched to the Wisconsin State Highway Commission. While in Boston I also learned that Jack Luby was around the Institute during the summer. Jack has had tough luck with several illnesses and we don't know just what he is doing at present.

Several of the boys are going back to school this fall. I ran into Bion Moore in New York and he announced that he was going to study at Yale for a while. Bob Cook is planning to leave his job and take graduate work at the Institute, and Josephs plans to take up some studies in Boston. Indications are that the graduate enrollment is going to be greater than ever. I am planning to move on October 1, so send letters to the new address given below. — GEORGE P. PALO, *Secretary*, 426 East 238th Street, New York, N. Y.

## 1929

A couple of weeks ago all Technology men in the vicinity of Akron were invited to inspect the exterior of the world's largest airship, the U. S. S. *Akron*, from close range, by Paul W. Litchfield, President of Goodyear. The Cleveland Technology Club turned out in a large group for the affair and together, with the Akron organization, we had a crowd of about 180. Stix Hertzmark, IX-B, was the only one of the Class of '29 group to show up from Cleveland. Practically all of the Akron '29 group turned out and enjoyed this intimate survey of the big

1929 Continued

ship with the rest of the party. Most of us here in Akron have followed the construction of the *Akron* from the very start, but this close-up added to our store of knowledge concerning its details.

Several of the Technology men from the Goodyear-Zeppelin Corporation attended the gathering and each took a group and explained the details of its construction. I only regret that more of you could not have taken advantage of this opportunity for Technology men to see the ship at close range. The day the ship made its initial flight no one did any work at the Goodyear offices. From noon on, the grounds around the Akron airport were lined with the thousands who came to see that first flight. It was cut loose on its maiden voyage at 3:37 P.M. and remained in the air for about four hours taking in Cleveland while cruising around. Everything was so satisfactory that the ship was groomed for another test flight the next day. This second flight was to test its turning, diving, and climbing ability. It was a grand sight to see that great ship cruising after dark with its running lights blinking. The Navy will soon have it, and work has already been started on its sister ship. It's a beautiful sight to behold a ship that size rise in the air carrying 113 men.

Bob Riley, XVI, has been participating in the Army Air Corps maneuvers as a member of the 302d observation squadron of the Connecticut National Guard, according to recent papers. He is now with Pratt and Whitney Aircraft Corporation in East Hartford. — Austin Fribance, VI-A, and Mrs. Fribance are now the proud parents of a daughter born last May. — Frank Pierson, XV, and Miss Florence Morrison of Brooklyn are engaged, according to newspaper notices of last May. — The engagement of Carl C. Howard, IV-A, to Miss Helen Lyndon of Arlington, Mass., was announced in the *Boston Transcript* of early May. I'm sure that everyone joins in congratulating these classmates and in wishing them a great deal of happiness.

Ed Michelman, VI, writes as follows about his work with RCA: "I have recently been transferred to RCA Institutes here in New York City from Camden where I was in the RCA Victor plant in sundry interesting jobs. (I went with RCA immediately after graduation.) Here I rely on the material I learned in Course XV more than that from VI, as I am in the office of the Treasurer doing statistical analyses.

"RCA Institute is a school run by the RCA to give resident or home study instruction to ambitious fellows who didn't go to Technology. We have a fine gang of instructors, most of whom have been to sea and have many an interesting tale to tell in consequence. Ken Gove '28 is in New York for RCA Victor, selling their centralized radio systems. I worked for him when I first got out.

"I am reading Erny Guillemin's new book now (he is a Course VI prof. in case you don't remember) and I find his methods of approach to mathematics amusing

enough to make my fellow riders on the great New York subways think I am reading college comics.

"I beseech any '29 men to look me up here at 75 Varick Street or at home at 507 West 113 Street (Cathedral 8-8529) when they strike town. This is a hellishly discourteous town to strangers. I saw Joyce, VI-A, also P. B. Howe in Philadelphia. They are working for Edison, I think. Milt Male was over to dinner a few weeks ago. He is looking prosperous as usual." — EARL W. GLEN, *General Secretary*, 415 Hillwood Drive, Akron, Ohio.

## 1930

The past few months have been eventful as far as the Class is concerned. Since the publication of the last class notes, many of us have started on new work, have changed jobs, or have changed our legal status. From the number of weddings reported in the Class, I would judge that my transfer from the Perth Amboy factory to the Niagara Falls plant of the Rossler-Hasslacher Chemical Company will make this office a headquarters for 1930's honeymooners as well as a news collecting center. The transfer took place about the middle of August and we are now preparing ourselves for a long winter's hibernation, and we would enjoy very much having any and all honeymooners, tourists, or other visitors drop in to see us.

Your Secretary attended the Technology dinner in Buffalo during the A.C.S. meeting at which time he saw Art Grifith who is working in Buffalo and Sam Moss who was attending the meeting.

News has come to me of the following engagements and other events of interest to the Class: The engagement of Cedric A. Roberts to Miss Dorothy E. Hendrickson of West Concord was announced. Roberts is at present in New York with the Erie Railroad. — On July 14, Leo O'Neil was married to Miss Eleanor Barbara Sullivan of Newton. — Ralph Peters was married on June 23. The lucky girl was Miss Phoebe Rowe of Cincinnati. Plute is now working for the Eastman Kodak Company in Rochester, N. Y. — On July 7, Miss Dorothy Drummer became the bride of Reginald Tart. — Thursty Ramsey was married on August 15 to Miss Edna Niven of Haddonfield, N. J. Thursty, we understand, is working for the Pan American Airways. — The wedding of Wilfred Howard and Miss Patty Field Brown took place in Falmouth Foreside, Maine, on August 1. It is rumored that Bill is planning to return to the Institute for graduate work this fall. — On August 29, Stephen Van Norman married Miss Elizabeth Parker of Amherst. — Last but not least we have the news of Phil Holt's wedding on October 3. The blushing bride was Miss Ottila Nichols of Cambridge. Jack Bennett, Ted Riehl, and Wallie McDowell of '30 were all ushers.

The marriage of Charlie Flint to Miss Janet Brodie of Staten Island, N. Y., was to have taken place on September 6, but unfortunately was postponed indefinitely when the bridegroom-to-be was taken

to the hospital with an acute case of appendicitis. Charlie is at present working with the New York Tel. and Tel. in New York City and is living with Irving Dow at 149 West 4th Street.

We are also glad to notice the success of one of our ex-classmates. The yacht race to England which was held this summer was won by Olin James Stephens of our Class. — We have word that Joseph Twinem has been appointed State Geologist in Maine. He is also a member of the faculty of the University of Maine. — We hear that Margaret Van Pelt is assisting her father in preparing plans for the new post office building in Patchogue. Miss Van Pelt has just returned to this country after a year and a half spent in Europe studying architecture. — MORELL MAREAN, *General Secretary*, 1239 Norwood Avenue, Niagara Falls, N. Y.

## COURSE I

Course I notes are exceptionally scarce these days. If it had not been for the fact that I was able to attend the Poughkeepsie Regatta, I would have no news at all. Dick Nason, Carl Harris, and Charlie Hughes were among those I saw at Poughkeepsie. Dick is designing steam radiators and other metal castings, but I was unable to get any information from the other two. As for myself I have been sharing a garage apartment with Gordon Lister. Any news from the members of the Class will be greatly appreciated. — ALLEN LATHAM, *Secretary*, 2106-A Kanawha Street, Charleston, W. Va.

## COURSE X

First honors go to John K. Sherman, otherwise known as Jake, who is now residing at 320 Burns Avenue, Wyoming, Ohio. Without urging, and of his own free will and volition, he sends the following news: "I am engaged in development work in the new laboratories of the Philip Carey Company of Cincinnati and have already had occasion to try to improve some of their asphalt and asbestos products.

"Carl Franz is working in the control labs of the General Chemical Company's Sulphuric Acid Plant at Marcus Hook, Pa. He probably insists that it is the largest contact plant in the world. — Byron MacKusick summered at West Southport, Maine, in the hopes that he will step into something big in the fall. We hope it will be an open manhole."

Jim Holden, Ralph Rowzee, Phil Holt, and Ted Riehl have joined Jim Merrill in Akron, Ohio, where they are all working with Goodyear. — Bill Dodge is assistant director at the Bangor Station of the Practice School. His thesis partner, Bill Waite, is a designing engineer of one sort or another for the Alco Products Company. He is living at 627 Washington Avenue, Dankirk, N. Y.

Sanford Moss stopped off for a visit in Rochester on his way home from Buffalo where he has been working for the summer with the du Pont Cellophane. He was awarded the Institute's Redfield Proctor Fellowship for this year, and is going abroad to study colloidal chem-



1930 Continued

istry and get his Ph.D. under Professor E. R. Rideal. Sandy's address will be G-11 St. Michael's Court, Gonville and Cain's College, Cambridge, England.

The Eastman Kodak Company put five of us on its payroll this July: namely, Dick Wilson, Stan Wells, Ralph Peters, Greg Smith, and your Secretary. Wilson is working in the film emulsion coating department; Wells and Peters are in the paper service lab.; Smith solves special problems that arise in the industrial lab.; and I am doing experimental work on the nitration of cellulose. Peters has returned from his honeymoon and seems to be thriving on the home cooking of his new bride. Mr. and Mrs. Peters are living at 75 Magee Avenue, Rochester, N. Y. — HOWARD S. GARDNER, JR., *Secretary*, Apt. 205, 1126 Dewey Avenue, Rochester, N. Y.

## 1931

With apologies to *Time* the following names make the following news: On June 22, Horace S. Ford, Jr., and Miss Katherine Allan of the Class of '31 at Wellesley were married. They will make their home at the Fensgate on Beacon Street during the coming year while Fliv studies for the Master's degree. — Lincoln S. Gifford and Miss Ruth Elizabeth Douglas were married during July in South Durham, Maine. Gifford has gone to work with the Illinois Zinc Company at Peru, Ill. — Frank E. Burley and Miss Pearl E. Wilson were also married during the month of July. Burley is now an electrical engineer with the Radio Corporation of America.

Miss Mabel J. Higgins was married to Edward Handley Hayes, this marriage taking place in July also. And while on this subject there are two engagements to be announced. The engagement of Miss Janice Weber to Kenneth E. Wischmeyer, and that of Miss Elisie Watkins to Francis Dickens Weeks. Wischmeyer was recipient of the Steadman architectural prize which affords him one year's travel in Europe. Speaking for the Class as a whole, I should like to offer heartiest congratulations and best wishes to these several couples.

Returning from a summer in Europe to begin work are Glenn Goodhand, who will be in Rochester with the Eastman Company; Gil Roddy and Joe Birdsell, both of whom are to be in Boston this winter; Randy Binner; and Jim Fisk, who is on the Institute's staff this year. Word has been received that Lou Morse, our Tech-in-Turkey representative, has arrived at Robert College, Istanbul, Turkey, and has been appointed instructor in physics.

Jack Brown has been accepted for enlistment in the U. S. Coast Guard Service. He has signed a three-year enlistment and has been sent to New London for training. — Arthur Sugden has recently sailed for Havre. He will spend five months studying industrial conditions in France and Germany and the new engineering projects in Russia. Word has been officially given to the press for publication that Bob Leadbetter and Nels Has-

kell are now registered at Harvard Business School, so, of course, they have no worries for two more years. — Leslie Reed is associated with the George H. Reed and Company, Inc., building constructors, while Ramon Perez, who is assistant sanitary engineer of Porto Rico, has been spending the summer visiting the health departments of the various states. — JAMES B. FISK, *General Secretary*, 4 Story Street, Cambridge, Mass.

## COURSE XV

Course XV seems to be holding up well under the depression with a large number of the men securing positions. Several of our luminaries are with Sears Roebuck. Bob Baxter is in the Philadelphia division and Johnny Smith expects to be there, while Bob Wilson, Bryce Spruill, Harry Smith, and Stott are in Chicago, and Ed Abbott is in Rochester.

Several of the men are around Boston. Ed Blake is at Dewey and Almy's Walpole plant; Dick Ashendon is with L. L. Rowe in Boston; Bob Snyder is working for a banking concern in Boston; and Pete Collado is helping to keep the Murray Printing Company supplied with work. Gil Roddy and Art Lutz will be back at the Institute to work for their Master's degree, while yours truly will be assistant in the Business and Engineering Administration Department.

The rest of the men are fairly well scattered with Dave Buchanan in New York with the New York Edison Company; Phil Frink in Seattle with the Washington Iron works; Glenn Goodhand with Eastman Kodak in Rochester; John McKasley in St. Louis with the Atlantic National Bank; and Lou Morse in Turkey as the T. C. A.'s representative there. Bert McLeod is with the Alfred Hale Rubber Company in Quincy. — JOHN M. MACBRYNE, JR., *Secretary*, Room 1-181, M. I. T.

*M. I. T. Association of Buffalo*

On September 1, a rousing Technology dinner was held at the University Club in honor of President Compton. Technology men who were attending the American Chemical Society Meeting in Buffalo joined the local group for the occasion. Dr. Compton presented some of the problems facing the Institute today, and his plans for the future met with enthusiastic approval. We wish to express our sincere appreciation to Dr. Compton, and express the hope that his inspiring visit may be repeated soon. — CLAYTON D. GROVER, '22, *Secretary*, Whitehead Metal Products Company, 319 Niagara Street, Buffalo, N. Y.

*The Technology Club of Cincinnati*

The Tuesday luncheons at Hotel Gibson were well attended during the summer months, the large round table in the southwest corner of the Bird of Paradise Room being frequently crowded to capacity. Mathematical recreations were unusually popular during the months of

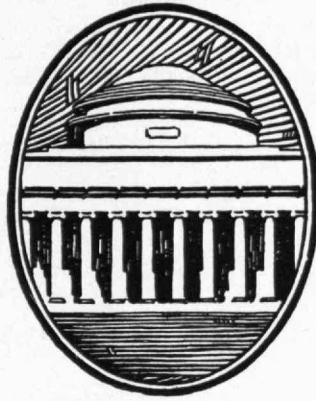
July and August, but in September these had to give way to the vacation tales of Fred Garber '03 and Stan Hooker '97, two of our plutocrats who spent a considerable part of the summer about the Great Lakes. During the past vacation period it was a pleasure also to have a number of the present undergraduates drop in on us at our luncheons; the sons of the sons of Technology are coming into their own.

Despite the depression and the increased tuition, the Scholarship Fund in charge of Stuart R. Miller '07 is responsible for starting another young Cincinnati at Technology this year. This is the third one to be sponsored by the Technology Club of Cincinnati. Candidates are carefully investigated for ability and personality and are introduced to members of the club before the scholarship is definitely tendered. This has resulted in happy selections, the men chosen doing excellent work and affording us keen satisfaction in their appreciation of our efforts. — WILLIAM V. SCHMIEDEKE, '12, *Secretary*, The Penker Construction Company, 1030 Summer Street, Cincinnati, Ohio.

*Technology Association of Northern California*

Following the inspiring time spent with Dr. Compton (described in the October issue), the Club has held several Executive Committee meetings, and on the night of September 16, 28 members gathered at a meeting in which we were very entertainingly told the experiences of R. S. Clark '06 who last spring attended his class reunion on Cape Cod, and Archie L. Mock '21, who succumbed to the same strong urge. We also enjoyed moving pictures of Dr. Compton's visit and colored movies of our President's recent visit through Yellowstone. Amusements consisted of the discussion of the merits of membership on the Program Committee. This committee has not only provided us with attractive programs, but has found it possible to gather in sufficient promotions so that the committee no longer exists. John G. McLeod, Jr., '20, Chairman of the Committee, arranged our latest meeting in detail just in time to learn that his presence in Los Angeles was immediately requested to assume the position of Pacific Coast Manager of Sales, Fuel Oil Division of The Texas Company. Following this lead, Mr. H. M. Nabstedt '05, Vice-President Amberson Dam Company, learned that he would be transferred East to take over activities in the western half of the United States. Again we lost a good man to the demands of industry. R. S. Clark '06 is waiting his appointment daily, and jobs on the Program Committee are in great demand. With the premium which has been placed upon membership in this committee, we expect to have many interesting and worthwhile things to report for the remainder of the year. — FORREST G. HARMON, '23, *Secretary*, Columbia Steel Company, Room 1428, Russ Building, San Francisco, Calif.





# INFORMATION

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The Institute publishes a variety of bulletins, fully descriptive of individual courses, as well as a catalogue of general information essential to the entering student. The Technology Review Bureau will be glad to send, gratis and post free upon request, one or more copies of any publication listed below, or to forward any special inquiry to the proper authority.

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## THE TECHNOLOGY REVIEW BUREAU

ROOM 11-203, MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
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# FUNDAMENTAL MEASUREMENTS

**R**EALIZATION by industry generally of the many benefits obtainable from the judicious application of vacuum tubes has done much to stimulate research and development in the fundamentals of what was a few years ago called communications engineering. Today, the field is broader, much broader than communications, and there are few important industries which do not benefit from the broadening of this one branch of electrical engineering.

But in spite of the variety of new ideas for applying vacuum tubes in industry, the basic circuit elements of resistance (**R**), capacitance (**C**), inductance (**L**), must always be considered. And consideration, in practical quantitative work, implies measurement. It is its 16 years of experience with the building of apparatus for measuring **R**, **C**, and **L** that enables the General Radio Company to cope with so many problems involving the thermionic vacuum tube.

## • • • **R** • • •

General Radio builds resistance boxes and other devices composed of resistors for all kinds of precision work at high frequencies. The Type 602 Decade-Resistance Box is, as the name implies, an aggregate of resistance units for obtaining any desired value of resistance between 0.1 ohm and 111,000.0 ohms in steps as small as 0.1 ohm. They have switches mounted beneath the panel to protect them from dust and dirt. This is a new device.

## • • • **C** • • •

Variable condensers are manufactured by General Radio in a wide variety of styles and sizes for experimental as well as high-precision laboratory work. The Type 222 Precision Condensers are ideally suited for measurements of a high order of accuracy, since a high precision of setting as well as permanence of calibration were the principal features involved in their design. General Radio also makes bridges for capacitance measurements.

## • • • **L** • • •

Both fixed and variable standards of inductance are available in several sizes in the General Radio line. The Type 107 Variable Inductors are instruments of the variometer type for use as variable standards. The Type 107 Standard Inductance is an accurately adjusted fixed inductor for use as the reference standard in bridge measurements. A bridge and the necessary accessories for the measurement of inductance are also available.

Our Engineering Department is always glad to answer inquiries concerning communication-frequency measurement problems and their solution.

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